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# A Model for Piloting New Digital Solutions in Multinational B2B Environments

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The objective of this thesis was to propose a framework for piloting new digital solutions during development projects in multinational B2B companies for the case company. This study aims to identify the critical factors needed for executing successful global pilot programs and thus supporting the further deployment of new digital solutions.

The outcome of this thesis is based on interviews held with company employees who have been either directly or indirectly involved in pilot projects where a new digital solution has been developed. Furthermore, internal company materials are examined to comprehend the current state of the company and support in building the piloting framework.

This thesis follows a gate-based approach, where the first step was to conduct the current state analysis to understand the existing practices and challenges in piloting new digital solutions globally within the company. Subsequentially, based on the findings related literature and best practices were explored. Finally, the proposal was built and validated with company representatives.

The key finding of this study shows that the company is missing a standardized approach for piloting digital solutions, which would take into consideration critical factors in both development activities – operational and technical development. There are many consequences to this. During a pilot there are often many things which are not validated or considered thus compromising the efficiency of the roll-out later on. Such critical factors include for example choosing a fitting pilot location.

The outcome of this thesis is a piloting framework which consists of three parts: pilot type descriptions, a pilot location feasibility checklist and a pilot prerequisites checklist. The proposal is aimed to support the global project team during the preparation, execution and review phase of the pilot.

The thesis outcome is expected to provide value to the case company and other manufacturing service companies alike which operate globally by giving guidelines for executing successful digital solution pilot projects.

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|---|---|
| Keywords | Piloting, digital solution, global |

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|---|---|
| Tekijä<br>Otsikko<br><br><br>Sivumäärä<br>Aika | Dana Koniel<br>Malli uusien digitaalisten ratkaisujen pilotointiin kansainvälisessä B2B ympäristöissä<br><br>67 sivua + 4 liitettä<br>9.5.2020 |
| Tutkinto | Insinööri (AMK) |
| Tutkinto-ohjelma | Tuotantotalous |
| Ammatillinen pääaine | Kansainvälinen ICT-liiketoiminta |
| Ohjaajat | Head of Ecosystem Business<br>Nina Hellman, Tuotantotalouden tutkintovastaava, Lehtori<br>Sonja Holappa, Lehtori |


Tämän opinnäytetyön tavoitteena on esittää kohdeyritykselle uusien digitaalisten palveluiden kansainväliseen pilotointiin tarkoitettu viitekehys, jota hyödyntäisi B2B yritykset. Tässä työssä tavoitteena on tunnistaa kriittiset tekijät onnistuneen kansainvälisen pilotoinnin läpivientiin ja sitä kautta tukemaan myös kokonaisvaltaisesti digitaalisten ratkaisujen käyttöönottoa pilotointivaiheen jälkeen.

Tämän työn lopputulos perustuu haastattelujen löydöksiin yrityksen asiantuntijoiden kanssa, jotka ovat olleet joko suoraan tai epäsuorasti mukana projekteissa joissa pilotoidaan uusia digitaalisia palveluja. Sekä yrityksen sisäisiin materiaaleihin, joita on analysoitu, jotta ymmärretään yrityksen nykytila, sekä tukemaan kehitysehdotuksen luomisessa.

Tämän opinnäytetyön ensimmäiseen vaiheiseen kuuluu nykytila analyysin suorittaminen, jotta ymmärretään yrityksen olemassa olevia toimintamalleja ja tapoja, sekä haasteita digitaalisten palveluiden pilotoinnissa kehitysprojektien aikana. Näiden löydösten perusteella aiheeseen liittyvää kirjallisuutta tarkastellaan. Lopuksi kehitysehdotus rakennetaan ja validoidaan yrityksen henkilöstön kanssa.

Työn avainlöydöksiin kuuluu se, että yritykseltä puuttuu standardoitu toimintamalli digitaalisten palveluiden pilotoimiseen, joka ottaisi huomioon kriittisiä tekijöitä, sekä operatiiviselta tasolta, että teknisen tuotteen kehityksen tasolta. Tämä vaikuttaa usealla tavalla pilotoinnin ja koko käyttöönoton onnistumiseen. Yksi esimerkki näistä kriittisistä tekijöistä on sopivan pilottikohteen valitseminen. Pilotoinnin aikana jätetään myös useita asioita validoimatta, jotka myöhemmin vaikuttavat globaalin käyttöönoton tehokkuuteen.

Työn lopputuotos on pilotoinnin viitekehys, joka koostuu kolmesta päätuotoksesta: (1) Pilotoinnin määritelmät, (2) Pilottikohteen soveltuvuuden analysointiin käytettävä tarkistuslista, (3) Pilotoinnin esivaatimusten tarkistuslista. Lopputuotoksen tavoitteena on tukea globaalia projektitiimiä pilotoinnin valmistelun, läpiviennin ja arvioinnin vaiheissa. Tuotokset on myös suunniteltu, siten että niitä voisi hyödyntää kokonaisvaltaisessa digitaalisen palvelun käyttöönotossa.

Työn lopputuotoksen odotetaan hyödyttävän työn kohdeyritystä, sekä muita globaaleja teollisuus- ja palveluyrityksiä tarjoamalla ohjeita digitaalisten palveluiden pilotointi projektien menestyksekkääseen läpivientiin.




| | |
|---|---|
| Keywords | Pilotti, digitaaliset ratkaisut, kansainvälisyys |

## Contents

## List of Abbreviations

| | |
|---|---|
| R&D | Research and Development, refers to the activities undertaken by corporations or government to develop or improve new products or services. Usually a separate department within a company. |
| IT | Information Technology, refers to technology such as hardware, software, internet or individuals who work with these technologies. Usually a sperate department within a company where technical areas of the business are managed. |
| PoC | Proof of Concept, used for demonstrating the feasibility of an idea. |
| KPI | Key Performance Indicator, used as performance indicators to measure and evaluate the success of a particular aspect within a company such as a program, project, products and other initiatives. |
| FL | Frontline, in this study refers to company subsidiary organizations usually other country units located in different geographical areas. |
| UAT | User Acceptance Testing, refers the last phase of testing where the intended user group tests whether their requirements are met for the solution to be accepted. |
| CSA | Current State Analysis, in this study refers to the current state of the company regarding a topic which is obtained by executing certain activities. |
| B2B | Business to Business is a business model which means that a business is selling its products/services to another business, instead of the consumer (B2C). |
| MVP | Minimum Viable Product refers to a product which is not completed in terms of development and functionality, but has the minimum amount of features to be introduced to a limited amount of customers for the purpose of gathering feedback for the development team. |

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# 1 Introduction

In today's competitive market companies are under constant pressure to innovate and develop their businesses in order to continue to deliver value for their customers and differentiate in the market. Implementing new or improved digital initiatives driven by the global functions is one way companies try to tackle these challenges.

These digital initiatives can be internal renewals or improvements to operational processes and tools, such as implementing a new sales tool and/or development of new services for customers. There are multiple challenges and risks when initiating a development project – especially on a global scale. One way companies try to ensure the success of these initiatives is by piloting.

Piloting is about experimenting with small-scale projects where the objective is to test the new initiative in defined locations, either in a single country, multiple countries or a specific area of the business. A successful pilot is then usually followed by a full-scaled regional or global roll-out.

Whether a pilot is successful is determined by multiple factors. Piloting challenges and the value that companies receive from piloting very often comes down to their internal organizations and cultures. How much do these need to be transformed to effectively pilot new digital solutions – and then of course deliver them successfully after the pilot?

## 1.1 Business Context

This study was conducted for a global company which operates in the elevator and escalator industry and is a leader of its industry. The company manufactures elevators, escalators, auto walks and automatic doors. In addition the company provides services for maintenance and modernization, to add value to the buildings' life cycle. (The company's website)

The company operates in over 60 countries worldwide, has around 500 000 customers and employs around 60 000 people. The company's revenue was 9.0 billion euros in

2018. The organizational structure consists of five geographical areas which conclude of different geographical units. (The company's website)

This study was conducted for one of the company's global functions' which aims to provide consistency and speed to their customers by developing the company's operating model. The Global Function works closely with Global Process Owners, Area Heads and all business lines and functions. (The company's Intranet)

## 1.2 Business Challenge, Objective and Outcome

Digitalization has created immense pressure for traditional manufacturing companies to renew and/or improve their operational models and overall offerings to meet the needs of their customers and ensure continuous business growth. In the case company these digital development initiatives are supported by company-wide development project models. The purpose of these models is to ensure that project activities are executed through pre-defined methods which support in delivering these developed solutions effectively to deployment.

In the case company each of these digital development initiatives generally go through a pilot phase which is then followed by regional or global deployment.

Piloting in the company is usually executed during a development project when a new or existing solution and/or operational change is piloted to either test the market with a new or improved service/solution, to decrease the amount of risk related to full-scale deployment or to ensure roll-out readiness by piloting an operational change. Overall, piloting in general is seen as a valuable way to acquire learnings and gain insight - if done properly.

The company's development project models utilized in piloting are executed by the Solution Creation teams which can consist of e.g. IT and/or R&D as well as Operational Development teams. Each development project model is used based on the project itself and usually follows either a traditional waterfall methodology or agile methodologies.

During digital solution development projects, piloting is executed to validate and test the new solution. However, the challenge in the case company is that the focus is too much on piloting the technical solution instead of piloting all aspects including technical, people and process parts of developing a new solution.

These challenges stem form e.g. developing in silos between solution creation and operational development teams. However, instead of developing in silos the company is now aiming to have a more holistic view for operational and technical development projects. The company is missing a standardized piloting framework which would take both development perspectives into account to ensure efficient end-to-end process validation for developing and delivering a new digital solution and later deploying it.

The aim of this thesis is to support digital solution piloting projects by ensuring that the critical elements for pilot success are considered to guarantee deployment readiness. **The objective of this study is to propose a piloting framework to support the current digital solution development project models**. In practice, this framework would be utilized for guidance by the global teams and project management teams and be stored so that all stakeholders involved could use it.

The outcome of this thesis is a piloting framework which consists of three parts: (1) pilot type descriptions, (2) a pilot location feasibility checklist, (3) a pilot prerequisites checklist. The proposal is aimed at supporting the global project management team during the preparation, execution and review phase of the pilot. The materials are also designed to be provided/used as input for the deployment phase.

## 1.3 Thesis Outline

This thesis consists of seven sections. The first section is an introduction to the thesis topic where the business context and challenge and objective are addressed. The second section describes the methods and materials utilized in this study. The third section provides an overview of the current state of the case company. The fourth section is a literature review based on the topics from the current state analysis, section three. Section five presents the initial proposal for the case company. Section six provides a validated proposal and lastly section 7 is a summary of the conclusions.

# 2 Method and Material

This section is divided into three parts: 1. Research Design, 2 Project Plan and 3. Data Collection and Analysis. The Research Design describes the structure of this study. The Project Plan describes the schedule of this study. Lastly, Data collection and Analysis describes in detail the data collection methods of this study.

## 2.1 Research Design

The table below describes the five stages of this study, including the data inputs and outcomes for a specific stage, based on the objective of the study. The final outcome figure describes the final proposal at the end of the project.

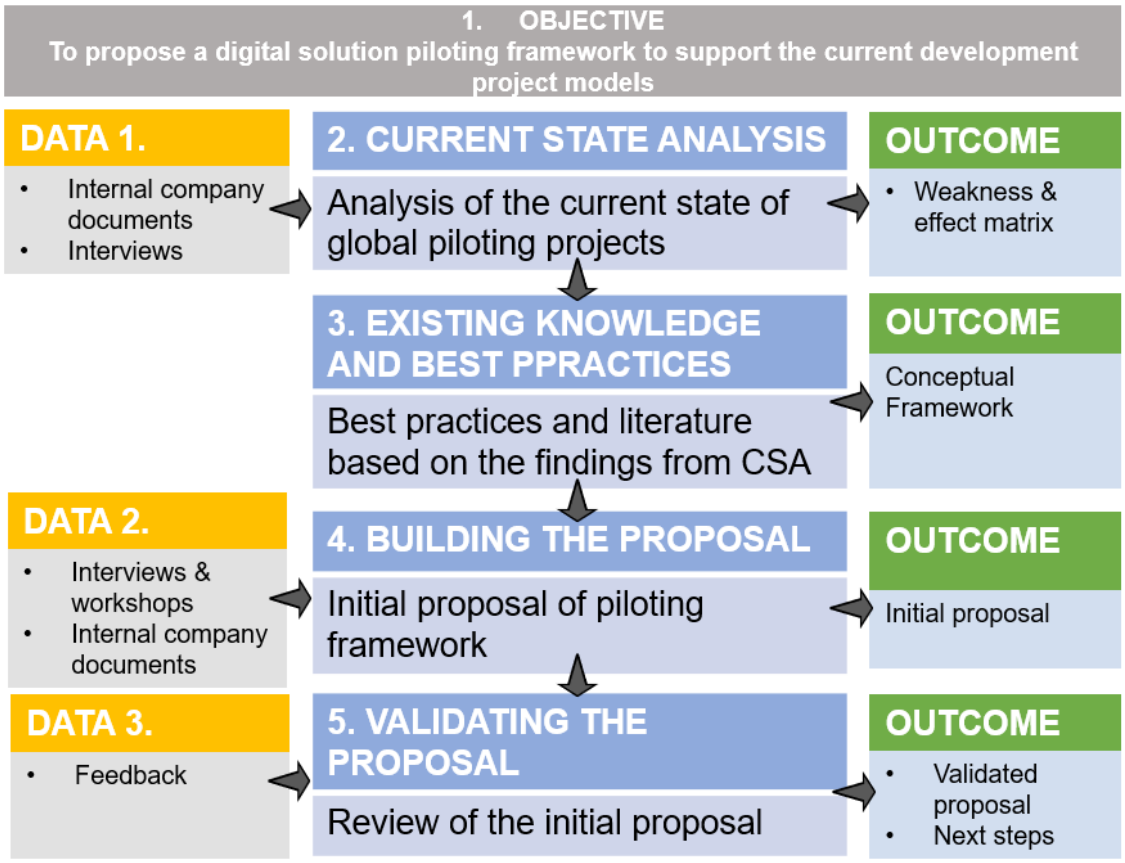



Figure 1 Research design

Figure 1 displays the research methodology. There are three data rounds in this study. The first data round consists of internal company documents and internal company interviews. The outcome of data 1 supports in building the current state analysis as seen in part 2 in figure 1. The outcome of the current state analysis is a weakness & effect matrix.

Based on the key findings from the current state analysis theory addressing relevant topics is presented as seen in part 3 in figure 1. The outcome of the theory stage is a conceptual framework. The second data gathering round consists of interview, two workshops and internal company documents. The outcome of data 2 acts as input for building the initial proposal as seen in part 4.

The outcome of part 4 is the initial proposal which is then presented and reviewed with the company representative. Thus the third data round consists of feedback around the initial proposal. After validation (as seen in part 5 in figure 1) the proposal is adjusted according to feedback. Thus the outcome of validation is the final proposal as well as next step suggestions for the company regarding further development and implementation of the proposal.

To conclude, the outcome of this thesis is a piloting framework which consists of three parts: (1) A pilot type definition document, (2) A pilot location feasibility checklist and (3) Pilot prerequisites checklist. The final version of the proposal is in appendix.

## 2.2 Project Plan

This study was carried out as part as a bachelor's thesis in Metropolia University of Applied Sciences as part of Industrial Management program. This study was initiated in January 2020 and finished in April 2020. Figure 2 illustrates a more detailed schedule including the phases of this study.

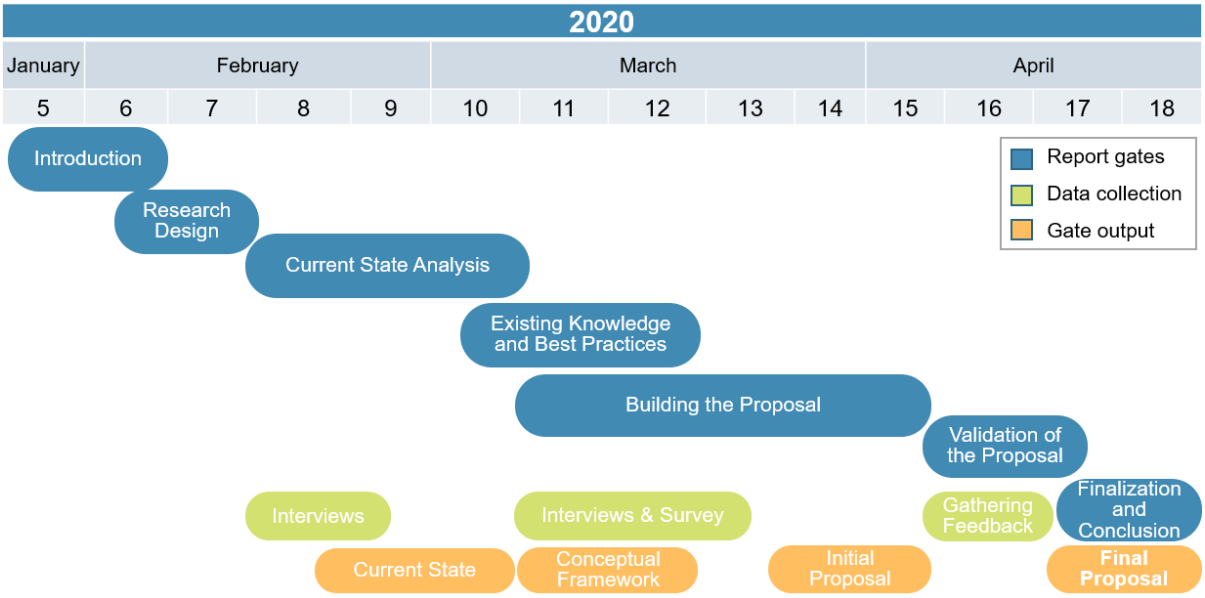



**Figure 2 Study schedule**

Figure 2 illustrates the weekly progress of this study, including report gates, data collection rounds and gate outputs. The total duration of this project was 14 weeks.

Next the data collection methods and analysis is described in more detail.

## 2.3 Data Collection and Analysis

The data collection of this study is divided into three rounds. The data collection methods included interviews, workshop and meetings. The first data collection round was conducted to create a current state analysis. The second data collection supported in building the initial proposal. The third data collection round consisted mainly of feedback from the case company representatives which was then utilized to validate and build the final proposal.

**Table 1 Second data round for CSA**

| | Participant / Role | Data Type | Topic, Description | Date, Length | Documented as |
|---|---|---|---|---|---|
| Data 1, For Current State Analysis | | | | | |
| **1** | Senior Project Support Specialist | Face to Face meeting | Current state of the company's digital solution piloting projects and methods | 19.2.2020 60 minutes | Field notes and recording |
| **2** | Deployment Manager | Face to Face meeting | Current state of the company's digital solution piloting projects and methods | 19.2.2020, 60 minutes | Field notes and recording |
| **3** | Operating Model Director | MS Teams meeting | Current state of the company's digital solution piloting projects and methods | 20.2.2020 60 minutes | Field notes and recording |
| **4** | Portfolio & Operating Model Development Manager | Face to Face meeting | Current state of the company's digital solution piloting projects and methods | 24.2.2020 60 minutes | Field notes and recording |
| **5** | Head of IT & Business Processes | MS Teams meeting | Current state of the company's digital solution piloting projects and methods | 27.2.2020, 45 minutes | Field notes and recording |
| **6** | Area Transformation Lead | Face to Face meeting | Current state of the company's digital solution piloting projects and methods | 3.3.2020, 45 minutes | Field notes and recording |
| **7** | Solution Design Owner | Face to Face meeting | Current state of the company's digital solution piloting projects and methods | 3.3.2020, 60 minutes | Field notes and recording |
| **8** | Operating Model Director | MS Teams meeting | Current state of the company's digital solution piloting projects and methods | 3.4.2020 45 minutes | Field notes and recording |

As seen in table 1 the first data collection round consisted of eight interviews. The interviewees were from the Operational and IT functions and one has been involved in customer solution piloting as  a Deployment Manager. The target of the interviews was to gain an understanding of the current state of the company's digital solution piloting and the participants were either from the Global team or from specific geographical areas.

**Table 2 Second data round for proposal building**

| | **Participant / Role** | **Data Type** | **Topic, Description** | **Date, Length** | **Documented as** |
|---|---|---|---|---|---|
| | Data 2, For Proposal Building | | | | |
| **9** | Head of Ecosystem Business | MS Teams | Workshop for determining proposal structure, format and content | 15.3.2020 60 minutes | Field notes and recoding |
| **10** | Business Development Director | MS Teams | Discussion on content for the piloting framework | 16.3.2020, 60 minutes | Field notes |
| **11** | Head of Digital Support Operations | MS Teams | Discussion on end-to-end process mapping for digital solution development projects | 8.4.2020, 30 minutes | Field notes |
| **12** | Technology and Innovation Consultant | MS Teams | Discussion on end-to-end process mapping for digital solution development projects | 8.4.2020, 60 minutes | Field notes |
| **13** | Director, Customer Solution Engineering | MS Teams | Discussion on content for the piloting framework | 8.4.2020, 30 minutes | Field notes |
| **14** | Test Manager | MS Teams | Discussion on testing as part of digital solution piloting | 8.4.2020, 30 minutes | Field notes |
| **15** | Head of Ecosystem Business | MS Teams | Workshop on building validation task list and pilot location criteria list | 24.4.2020, 60 minutes | Field notes |

Data 2 in table 2 shows the interviews/workshops held to gather information for building the initial draft of the proposal. Prior to the second data collection round the structure, format and content idea had been determined together with the company representative as seen in row 9. Next interviews were held with key people in relevant roles relating to

the critical challenges identified in the current state analysis, which is described in more detail in chapter 3.

**Table 3 Third data round for proposal validation**

| | Participant / Role | Data Type | Topic, Description | Date, Length | Documented as |
|---|---|---|---|---|---|
| | Data 3, For Proposal Validation | | | | |
| **15** | Head of Ecosystem Business | MS Teams | Validation of final proposal | 29.4.2020, 60 minutes | Field notes |

Data 3 in table 3 shows the validation method for validating the initial proposal. This was done in a review session with the company representative. Based on the feedback of this session, final changes were made thus finalizing the proposal in its entity. The final proposal is shown in detail in chapter 6.

This study also utilizes internal materials, which are used to analyze the current state analysis and to develop the final proposal. These materials are seen in the table below:

**Table 4 Company internal materials utilized in this study**

| | Name of the document | Extent | Description |
|---|---|---|---|
| For current state analysis | | | |
| A | Development Project Gate-based models | 3 pages | Development project management models for solution development and operational development |
| B | Operational Development project guiding materials | 10 folders | Slides and sheets for supporting development projects |
| For building the proposal | | | |
| C | Piloting in Solution Development | 3 pages | R&D definition for piloting |
| D | The company's Intranet | 15 files | The company's policies for development projects |

Table 4 shows that there were two steps when the internal documents were used. Row A and B show the documents used for creating the current state analysis. These documents mainly described two of the development project management models. In addition there was also supporting materials created to support the project management team,

these were also analyzed to determine the status of documentation to support during piloting.

Rows C and D depict the material used to support the proposal building. Row C consisted of a 3 page document which contained descriptions about piloting created by the global R&D function. This was also used to analyze what is missing from the current model to support the structure of the proposal for the case company. The company's Intranet was also heavily researched to search for development project related practices and guidelines (Row D).

In the next chapter the current practices for piloting in the case company are described as well as the key findings from the first data round interviews.

# 3 Current State Analysis

This section provides an analysis of the current state of digital solution piloting in the case company. First an overview of the process for conducting the current state analysis is described. Next is described the current models and ways the case company utilizes in piloting. Thirdly the findings and conclusions from the current state analysis are presented. Finally a summary of the selected development areas are provided based on the findings.

## 3.1 Overview of the Current State Analysis Process

To conduct and gain a holistic view of the current state of piloting digital solutions in the case company internal materials were explored and company employee interviews were carried out. Figure 3 visualizes the process.

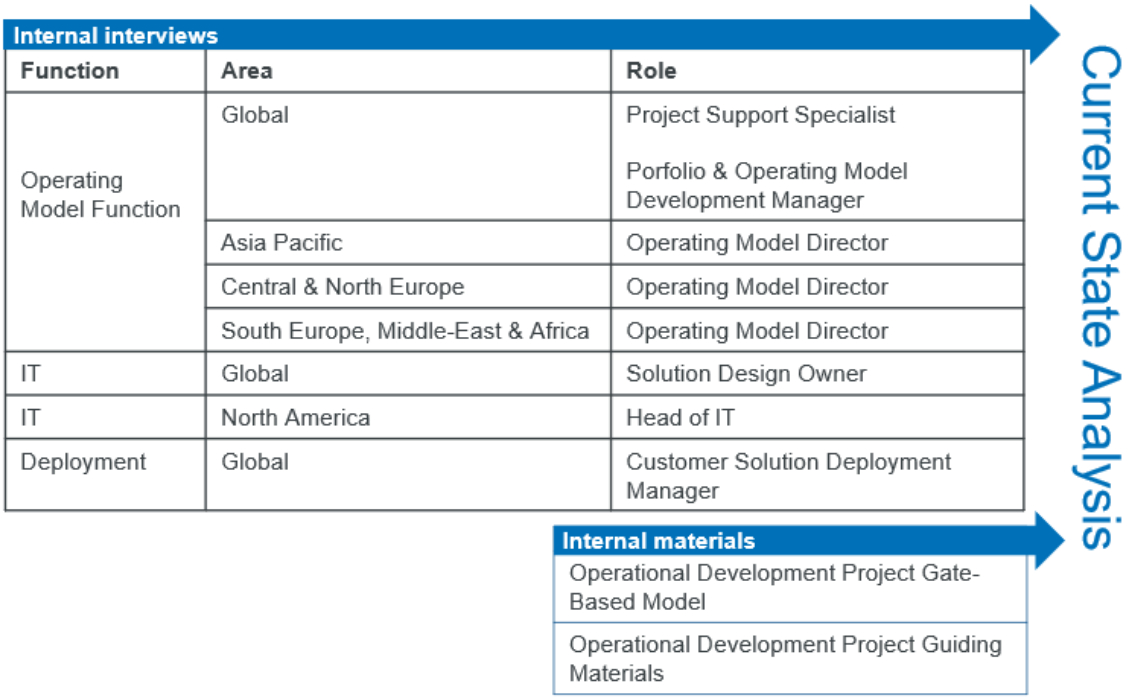



**Figure 3 Input for current state analysis**

As shown in figure 3 the interviewees who participated were from the company's Operational Development Function, IT Function and Deployment. The target of the current

state analysis was to gain a global and holistic view thus different area responsible and global representatives were chosen. The topics discussed are listed later in table 5 in chapter 3.3.

The interviewees from the Operational Development Function are guiding the piloting project teams but are not directly involved. Thus they have holistic insights and visibility to the current weaknesses and strengths of digital solution piloting. In addition, the Operational Development Function works closely with Global Process Owners, Area Heads and all business lines and functions including R&D and IT.

The interviewees from the IT function had a holistic view of piloting digital solutions in North America and on a global scale. The Deployment Manager had visibility into the challenges of piloting a digital solution to customers.

As seen in Figure 3 the internal materials utilized for the current state analysis came from the Operational Development Function and include: Operational Development Project Gate-Based Model which is described later in more detail and supporting and guiding materials for Operational Development projects.

## 3.2 Piloting New Digital Solutions in the Case Company

Piloting in the case company occurs both in development projects and deployment projects. Piloting in deployment projects is out of scope for this study. Development projects have two separate project management models Solution Development & Operational Development models, both are used depending on what is being developed. Figure 4 visualizes the overall alignment of these two development project models up until the initiation of deployment and roll-out.

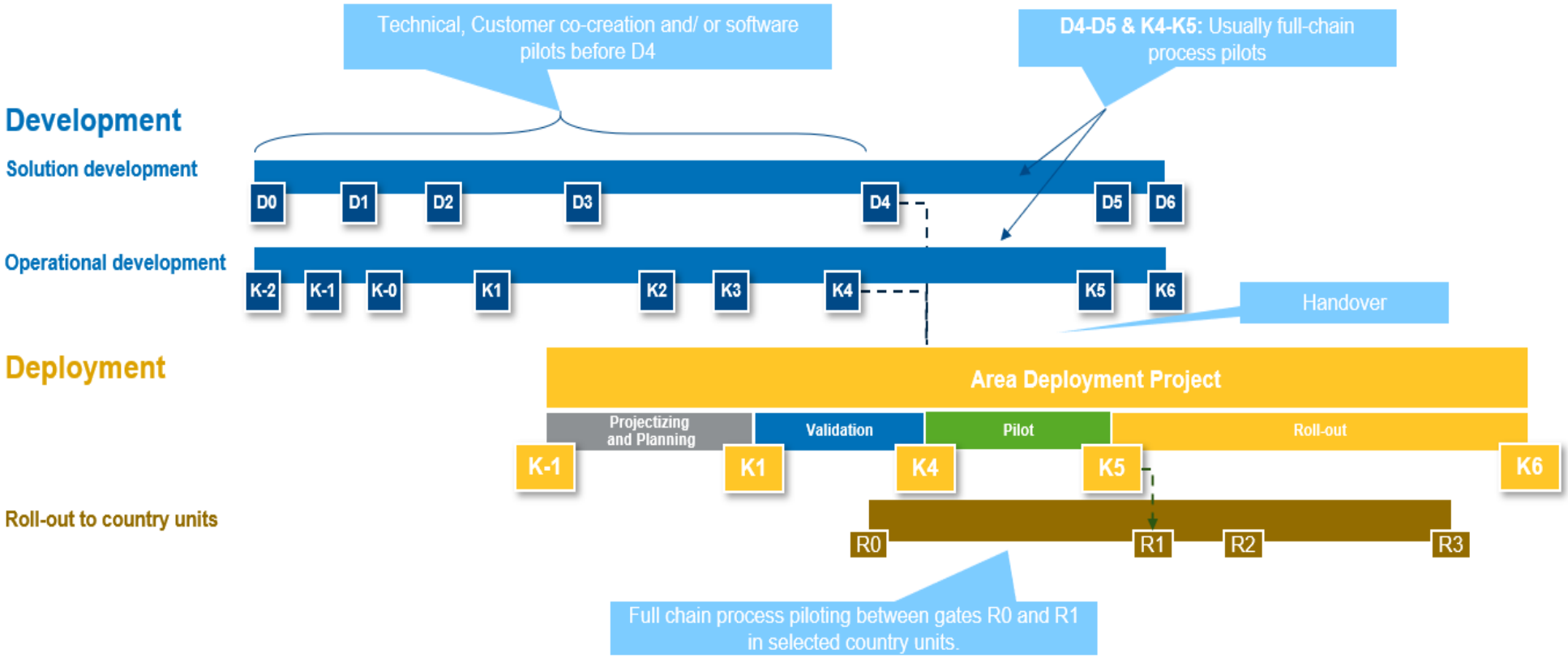



**Figure 4 Piloting in development and deployment projects in the case company (slightly simplified version from the company's internal materials.)**

As seen in figure 4 the development is divided into Solution Development and Operational development and follow their separate gate-based project management models. These models are somewhat aligned throughout the solution development depending on the solution being developed. Both have separate activities and teams within the company. Solution Development is a part of the organizations Technology and Innovation function which consist of different units such as R&D and IT.

The solution development project follows a Gate-based model where the purpose is to develop a service or a product and ultimately pilot the solution based on the context. Depending on the developed solution itself the purpose of piloting in solution development is to validate that the service or product works in the real operating environment, while using a solution in a limited and controlled scope of sites and enabling the project to find and correct issues before volume deliveries start. Piloting is a method to establish evidence that a new solution meets customer and stakeholder expectations in a real operating environment.

Different pilot types are conducted throughout the solution development project. Each gate approval represents a milestone within a project. Approvals to move to the next gate are given in the steering meetings. Once the Solution Development project has reached D4 milestone as seen in figure 4 that is when the solution is at a level of readiness to execute a full-chain process pilot, this means once the technical solutions had been validated then the validation of the full-chain process all the way from ordering to installation and maintenance takes place. Not every Solution Development project needs or executes full-chain process pilots. This depends on the product or service.

Parallel to the Solution Development, there is an operational development function which is in charge of developing the way the business is run in practice and touches the bases of processes, roles, organization, IT tools, data, governance and business performance management. This part follows a separate project management model.

Usually once both development projects have reached D4 and K4 milestones the project can start executing full-chain process pilots. Once D5 and K5 milestones are reached the development project team starts to prepare handover for the deployment project team who then takes over the project for further piloting and deployment.

The difference between piloting during development projects and deployment projects is that when deployment starts the solution is already released and shouldn't be facing any major technical or process issues.

The goal is that once the development project is closed and a ready developed solution is handed over to the deployment team all aspects should be validated and documented in a form of a "roll-out package" so that the full-scale roll-out of the new solution would be as efficient as possible.

## 3.3 Key Findings of the Current State Analysis Interviews

For conducting the current state analysis all interviewees were asked the same set of eight questions listed in table 4.

**Table 5 Current state analysis questions**

| | Question |
|---|---|
| 1 | What is your role in the company? How is your role related to piloting in development projects? |
| 2 | Are there any reoccurring challenges in the digital solution piloting projects you have been involved in? |
| 3 | What is the impact of these challenges in overall pilot success? |
| 4 | How would you define a successful pilot? What makes a successful pilot? |
| 5 | What kind of KPI's do you use to measure the success of a pilot? |
| 6 | What are the most critical factors for pilot success? |
| 7 | What are the strengths of the current situation? What works well? |
| 8 | What kind of improvements would you make to the current way the company pilots during development projects? |

The questions were chosen to obtain the most holistic view of the current state of piloting digital solutions in the case company the interview questions were open-ended. In addition the interviews were not focused on a specific area of piloting, but the target was to view digital solution pilot projects as a whole to comprehend the most critical and reoccurring challenges within the case company.

In addition to gaining insight for the current state analysis some questions were also set to give input to the proposal building stage. The interviewees were also given a chance to share any additional information outside the questions, which they thought would be relevant for this research.

### 3.3.1 Interview Output

The challenges from the current state analysis interviews were covering the entire project of piloting starting from pilot preparation until the closing and handover to deployment. The challenges are visualized in the table below.

**Table 6 Current state analysis findings**

| Identified challenge | Challenge description | Effect |
|---|---|---|
| The definition of a pilot during development projects is not clear | • Pilots are often treated as prototypes or PoC's | Pilots end up taking more time and resources then expected |
| Pilot objectives and success criteria are not clearly defined or measured during the project | • Objectives and success criteria are usually defined during the project | • Milestone approval is granted too early<br>• Solution is not ready in time |
| Inappropriate pilot location selection | • Pilot country units are selected without proper investigation of the units maturity, resources etc.<br>• The easiest or more familiar country units are often chosen | Deployment is less efficient and more time-consuming when all different business models are not piloted during the development project |
| Communication is not effective enough between all stakeholders involved in the project | • Lack of knowledge on which stakeholders should be involved<br>• Lack of communication on solution readiness | Country units become less engaged and less committed |
| Piloting focuses too much on technical solution validation | • Development happens in silos between Solution Creation and Operational Development teams<br>• End-to-end view is not clear in development projects | • Processes are not validated<br>• Roll-out efficiency is compromised |
| Feedback gathering is not systematic | • Often during piloting feedback gathering processes are not implemented | • Project teams learn less<br>• Continual improvement becomes compromised |
| Resource allocation | • Unexpected technical challenges e.g. bugs not accounted for in budget | • Piloting either takes too long or is done too quickly |

In the first column the challenges are depicited the second column describes the challenges in more depth, the third column shows the effect of these challenges on overall pilot success and deployment.

One of the frequently repeated challenges during the interviews was that often the definition of a pilot is not clear or the targets for piloting. Pilot projects are seen as prototypes or a way to validate a concept. In addittion there is lack of understanding on how much time, effort, committment and resources piloting takes.

As seen in the second row during the preparation of the piloting project objectives and success criteria are not properly set prior to piloting nor is the initiative measured continuously during the project. Steering committee ends up judging the pilot success without complete Information. The committee members may also feel under pressure to release

the product. The danger is that they will make an over-positive assessment of the pilot by jumping to conclusions if there is missing information. This can also result in the solution being released to production and deployment too early, without having the technical readiness or learnings.

Another repeated challenge was choosing the pilot location. This means that when the pilot is initiated the project management team chooses the location where they want to pilot the solution. Pilot locations can be either customers, units or both based on the project.

As the main reason for piloting is learning, the project team may often disregard this and often choose the easiest locations or the most familiar ones, thus minimizing the spectrum of different business environments. This then affects negatively on the efficiency of the full-scale roll-out and the deployment team might be unaware of the critical differences between country units such as unit dimensions, strategic intent, organizational structure, roles and responsibilities, IT systems etc.

Fourthly, piloting new digital solutions involves multiple stakeholders which should be engaged and informed during the pilot. The challenge is that the stakeholders during the pilot are usually unknown to the project team in the beginning of the project or the key roles might not be nominated yet. Thus communication and engagement becomes undoubtably less efficient in the absence of proper stakeholder analysis.

Another challenge was that the focus is too much on technical solution validation while piloting a digital solution. When piloting digital solutions globally there are multiple other aspects to look at - besides the technical solution - which are usually unclear or not defined during the initiation of the pilot, but more often defined unsystematically during the project. These other aspects are mainly about having the proper process to support e.g. the solution operation, delivery and sales, having the tools to support these operations and validating the human aspects such as proper onboarding and change management.

Subsequently deployment starts without having a “global template” meaning a replicable standardized set of documentation which implicates to the deployment team what has

been learned, what tasks have been executed, what has actually been piloted. Thus, deployment becomes is less efficient and more time consuming.

Feedback gathering during a pilot is also a challenge identified during the interviews, this then affects the learnings of the team and also affects minimizes the detection of improvement areas.

The last row mentions resource related challenges. Often the budget calculations might not have accounted for example for unexpected bugs and other technical development related issues. The number of interviewees that highlighted the different challenges can be seen in appendix.

## 3.4 Summary of the Current State Analysis

Based on the findings from the interviews and the timeline of this study the challenges were prioritized from the most critical to least critical together with the company representative. In addition to this the development proposal benefit to the company and personal workload for this thesis were considered.

**Table 7 CSA challenges prioritization based on benefit and workload**

| | Identified challenge | Benefit | Workload |
|---|---|---|---|
| A | The definition of a pilot during development projects is not clear | 5 | 2 |
| B | Pilot objectives and success criteria are not clearly defined or measured during the project | 4 | 3 |
| C | Inappropriate pilot location selection | 5 | 3 |
| D | Piloting focuses too much on technical solution validation | 4 | 3 |
| E | Communication is not effective enough between all stakeholders involved in the project | 4 | 3 |
| F | Feedback gathering is not systematic | 3 | 4 |
| G | Resource allocation | 3 | 4 |

Table 7 displays the weaknesses identified in the current state analysis interviews. These weaknesses were measured based on their impact to the company and the workload of addressing these challenges in the thesis. The items were then put in a benefit-workload heatmap matrix which is illustrated below.

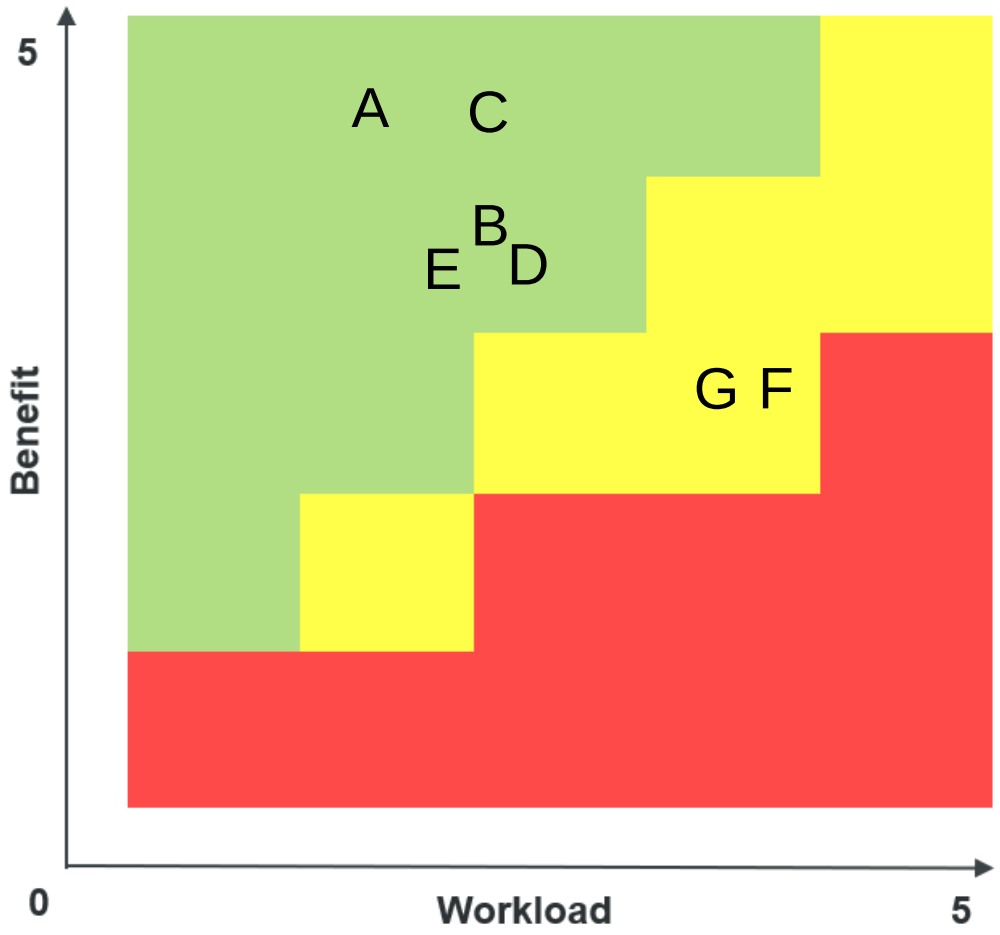



Figure 5 Benefit & workload heatmap

Based on figure 5 the following items were seen as top priority:

A. The definition of a pilot during development projects is not clear

B. Pilot objectives and success criteria are not clearly defined or measured during the project

C. Inappropriate pilot location selection

D. Piloting focuses too much on technical solution validation

E. Communication is not effective enough between all stakeholders involved in the project

Thus these five items were chosen as first priority for creating the development proposal. The rest of the challenges remains somewhat out of scope for this study due to the study schedule. However next steps concerning these items are discussed in chapter 7 where next step suggestions are proposed.

In the next chapter available knowledge relating to the found weaknesses in the current state analysis are presented. The following table depicts the found weaknesses in the current state analysis and related literature best practices which will be presented next.

**Table 8 Literature topics beneficial for addressing CSA challenges**

| Identified challenge | Addressed theory | Purpose of addressing this theory |
|---|---|---|
| The definition of a pilot during development projects is not clear | 4.1 What is piloting | To understand the purpose of piloting within a development project |
| | 4.2 Pilot implementation | To explore different pilot types and their implementation requirements |
| Pilot objectives and success criteria are not clearly defined or measured during the project | 4.3 Criteria for successful digital transformation initiatives | To explore the criteria for delivering successful digital initiatives |
| | 4.4 Setting project goals and measures | To understand the importance of setting the right metrics |
| Inappropriate pilot location selection | 4.5 Pilot location criteria | To explore criteria for choosing pilot locations |
| Piloting focuses too much on technical solution validation | 4.6. Service validation and testing | To explore service validation and testing types in service implementation |
| | 4.7 The four dimensions of Service Management | To understand more holistically all aspects which should be considered to deliver services which meet their desired outcomes |
| Communication is not effective enough between all stakeholders involved in the project | 4.8 Change Management | To gain a deeper understanding of change management and its key activities |

As seen in table 8 literature which was reviewed was divided based on the challenges scoped as part of this study. For row A the discussed literature was about defining piloting for row B measures and goals as part of development projects are presented as well as the elements seen as essential for delivering successful pilots. For row C theory addressing the criteria of a fitting pilot location is presented.

For row D some relevant service design & management practices were presented, mostly related to setting requirements when designing services. Lastly for managing communication between all stakeholder the topic of change management is presented.

The next chapter presents available knowledge and best practices regarding the findings of the current state analysis. The theory will be used to build and support in building the proposal for the company.

# 4 Available Knowledge and Best Practices

In this section available knowledge and best practices relating to the challenges gathered in the current state analysis are summarized to support in building the proposal for the case company. Figure 6 intends to visualize a more comprehensive structure for the study theory.

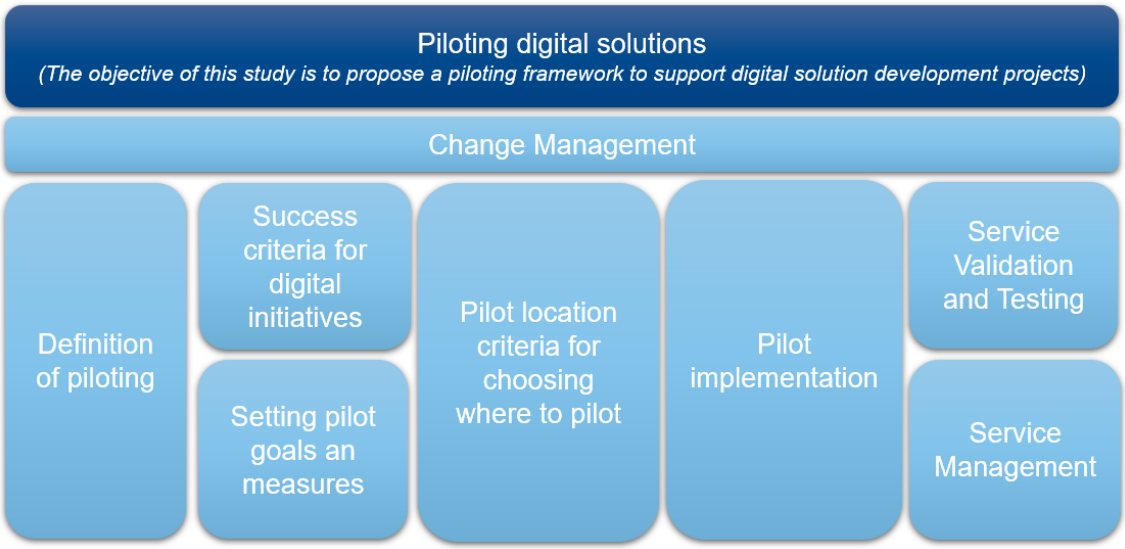



**Figure 6 Conceptual framework structure**

## 4.1 What is Piloting?

Piloting as a definition is a small-scale experiment to test something in practice, such as a process or a tool. Piloting in a way is a prototype of implementation, as it encounters challenges around communicating processes and intent to individuals who haven't been a part of the early design process. Pilots are often depicted as prototypes or implementations. During piloting the company above all learns how the service will work, will it affect other operating systems and services and how it possibly will be introduced. [Stickdorn et al: 2018]

However, a pilot is different from a full implementation as it is still an experimentation and a source for learning and testing. During a pilot everything is new, the service might still be in development and there might be workarounds outside the standard business

classifications. Also in contrary to implementation during a pilot the design team is fully engaged and ready to support in questions like “how” and “why”. After development is closed the design team is no longer as involved. [Stickdorn et al, 2018]

In digital solution development projects piloting can be synonymous to testing. The solution can be tested with a limited amount of users prior to the full-scale deployment to validate the benefits, functionalities and its fitness for purpose. The solution is tested with users who are a  part of the target group during in their day-to-day activities. During a pilot there is a chance to discover new test cases, which weren’t noticed during User Acceptance Testing (UAT). (Huovinen, 2017)

Research has shown that multinational companies tend to use a pilot approach whenever dealing with a complex and uncertain endeavor, thus testing the waters by piloting in a few sites and then ultimately roll out across sites. However, there are still companies which use a “big bang” approach which is often highly risky especially when the endeavor conflicts with the existing business model. (Buchel & Davidson, 2019)

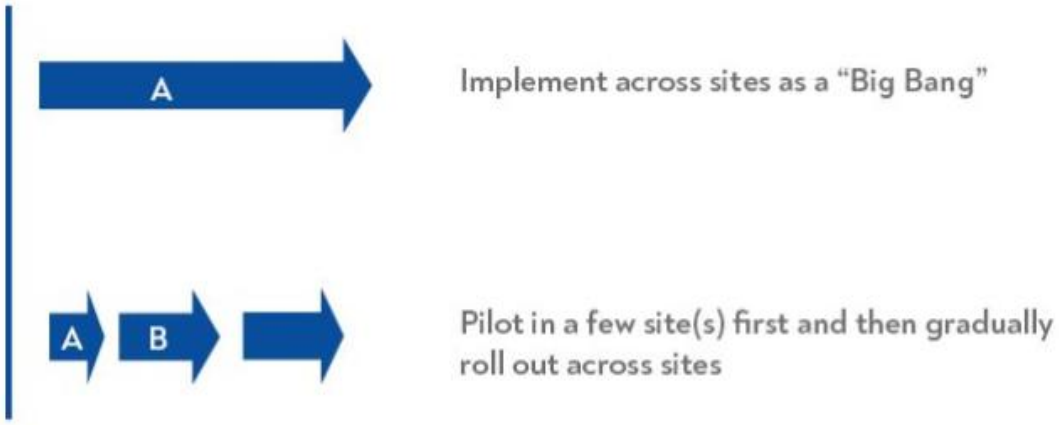



**Figure 7 Big bang implementation vs. piloting (Buchel & Davidson, 2019)**

For piloting to actually increase the likelihood of a successful initiative learning is essential. (Buchel & Davidson, 2019)

“Failing fast and then converting the learnings from these early steps into success is the essence of what makes piloting an essential part of enabling strategic agility” (Buchel & Davidson, 2019)

Piloting can have great advantages for the business. Below is a list of key benefits:

1. **It can help the company to put its product or service to the test.** Piloting can help in determining whether your new product or service will work in the real-environment, before full-scale roll-out, help expose the strengths and weaknesses of the new initiative. (Bytestart.co.uk, 2017)

2. **Discovering whether there's a market.** Testing your product or service in the real-environment can give the company valuable insights on the market and the value of your new solution. (Bytestart.co.uk, 2017)

3. **Valuable insights into the challenges the company might face.** Whether the pilot is a new process or product small-scale implementation can help identify any underlying risks or challenges before deploying the initiative on a larger scale. Piloting enables the company to improve their new product or service to make sure it is fir for purpose. (Bytestart.co.uk, 2017)

## 4.2 Pilot Implementation

Successful implementation of pilots requires the project teams to steer implementation according to the set performance measures and goals of the pilot by utilizing the following elements: stakeholder engagement, resource obtainment, quick learning, communication and initiative steering. These core elements take a slightly different approach based on the initiative type: growth or business efficiency initiative. Growth initiatives intend to pull revenue by entering new markets or new customer segments or by developing new products or services. (Buchel & Davidson, 2019)

Business efficiency initiatives primarily intend to improve business processes and reduce costs. Such initiatives can be either implementing a new enterprise management system, business process reengineering or quality management. Some initiatives however can fall into both of these categories. (Buchel & Davidson, 2019)

Figure 8 shows these key processes and their activities based on initiative type. (Buchel & Davidson, 2019)


**Figure 8 Core elements and activities for implementing business efficiency and growth initiatives (Buchel & Davidson, 2019)**

A core element of a successful pilot is its ability to be adopted in other country units. Negative feedback from the pilot participants can impact negatively on country unit engagement, subsequently leading to a negative feedback loop among other country units thus reducing the wide adaptation of the new initiative. To ensure widespread adaptation the requirements are having a right team, resources, pilot sponsor and local support. (Buchel & Davidson, 2019)

As for growth initiatives piloting is a way to demonstrate that the customers are willing to pay for the initiative. Instead of wasting huge amounts of resources and effort on a poorly designed and executed project, successful pilots can ensure that initiatives will have a return of investment and have the ability to scale the initiative to broader adaptation. (Buchel & Davidson, 2019)

## 4.3 Criteria for Delivering Successful Digital Transformation Initiatives

McKinsey initiated a Global Survey around digital transformations in 2018. Based on the survey results eight out of ten respondents have initiated a dramatic change in the

company with large-scale efforts in an attempt to gain benefits out of these new digital technologies or to keep up with the competitors. The survey results and years or research however has depicted that the success rate of these digital initiatives is low – less than 30% succeed. (McKinsey & Company, 2018)

Whatever the outcome of these digital change efforts might be, the results pointed to common traits among these companies. One, companies look inward when initiating these changes. The most commonly set objective for a digital transformation was to digitize the operating model – this was said by 68% percent of the respondents. (McKinsey & Company, 2018)

Secondly less than 50% said their objective was to communicate with external partners through digital channels or to launch a new service or product. Based on the survey 8 out of 10 respondents said that these change efforts were fairly large-scaled and involved multiple business units or the entire enterprise. (McKinsey & Company, 2018)

The survey respondents who achieved success have named 21 best practices which make success in digital transformations more likely. These best practices fall into 5 categories which are: empowering workers, leadership, communication, upgrading tools and capability building. (McKinsey & Company, 2018)

**Empowering workers**

The survey results highlighted ways in which companies which successful digital transformations empower their employees. One is reinforcing new employee behaviors. Redefining practices to align with new ways of working and empowering employees to be open and give feedback on when and how the digital change could be adopted. (McKinsey & Company, 2018)

**Leadership**

Changes in capabilities and talent takes place during digital change efforts. Almost 70% of the respondents mentioned that most commonly new team leaders who are familiar with digital technologies joined the management team. (McKinsey & Company, 2018)

Engaging with specific roles related to the digital change, such as leaders in transformation office or program-management who have dedicated their responsibilities fully around the change effort. Another key success criteria identified in the survey was leadership commitment whether it was by senior leaders of roles in which are directly involved in the digital transformation. (McKinsey & Company, 2018)

**Communication**

Transparency and active communication is key in delivering successful digital transformations. Moreover, is the communication of a change story. A change story ensures that the employees understand the reason for change and why the changes are important. Based on survey organizations which use this practice are more likely to achieve success. (McKinsey & Company, 2018)

Another key criteria is creating a sense of urgency by senior leaders for the change. This is a practice where undoubtably clear and active communication is key. (McKinsey & Company, 2018)

**Upgrading Tools**

Based on the survey findings one critical element for digital transformation and its success was using digital tools and digitized processes. Making use of these technologies in an organization emerged as one essential success driver. (McKinsey & Company, 2018)

**Capability Building**

The survey results showed that the importance of building skills and talent inside the organization is essential criteria for success in digital transformation initiatives. Out of the 21 keys to success three related to building digital capabilities. One of these keys was to restate the responsibilities and roles to support digital transformation objectives.

The other two factors were about engaging roles who can bridge the gaps between digital business parts and traditional business parts. These digital integrators or technology

innovation managers understand benefits of digital technologies and traditional business side and help build digital capabilities among employees. (McKinsey & Company, 2018)

## 4.4 Setting Project Goals and Measures

Setting pilot goals and proper measures is essential for monitoring the success of implementing the initiative – especially important is setting these targets prior to implementation. Setting poor performance measures which are not monitored during the project can ultimately lead to confusion among the management team on whether the initiative was successful or not and if it could be replicated in another country unit. (Buchel & Davidson, 2019)

Since metrics and measurements are at the heart of the agile product development, The Lean Startup approach has defined that success does not come from measuring alone, but knowing to **measure the right things.** Thus, understanding the definition between vanity metrics and actionable metrics is key. (Boldare, 2019)

### 4.4.1 Vanity Metrics and Actionable Metrics

Vanity metrics means measuring something that doesn't really give any truth about how successfully you've developed your product, vanity metrics don't give you anything to work with to improve further. (Boldare, 2019)

One classic example of a vanity metric is the amount of downloads of an app. Some might translate this to success, but does it really mean so? Does this metric tell the developers anything about the end-user experience with this application? How about does it tell how many people are actually using the app frequently after downloading it? (Boldare, 2019)

If no one looks at those metrics too closely, they might be good for PR. However, actionable metrics provide actual useful information to the development team and might speak about development success or customer behavior. (Boldare, 2019)

One example of an actionable metric is sales, designing a new feature to an app and then testing the existing feature in contrast with the new feature. Using a sales metric can establish user response to this new feature versus the existing one. (Boldare, 2019)

The data received from this metric can give valuable input for next actions, whether it would be to include the new feature in the next version launch, abandon the new feature or do some more work on it. (Boldare, 2019) Figure 9 below categorizes vanity and actionable metrics.

| Vanity Metric | Actionable Metric |
|---|---|
| Trial Users | Converting Users |
| Page Views | Conversion Rate |
| Social Media 'Likes' | Social Media Engagement/Referrals |
| Email Subscribers | Email Opt-In Conversion Rate |
| Leads in Sales Funnel | Cohort Analysis of Sales Funnel |
| Marketing Spend | Return on Marketing Investment |
| Total Customers Acquired | Customer Acquisition Cost |
| Monthly Revenue per Customer | Customer Lifetime Value |

**Figure 9 Vanity metrics vs actionable metrics (Crazy Egg, 2017)**

As seen in figure 9 an example of vanity metrics can be: trial users and page views. Whereas actionable metrics can be converting rates and user conversion rate.

## 4.5 Pilot Location Criteria

Buchel & Davidson state the following *"Choosing where to pilot an initiative plays a key role in its potential success or failure".* Depending on the type of initiative certain criteria are set. For delivering successful business efficiency initiatives three criteria are set for choosing a pilot location. These are credibility, replicability and feasibility. For growth initiatives the crucial criteria that a pilot location needs to deliver are desirability, viability and feasibility. (Buchel & Davidson, 2019) These are similarly visualized in the figure below:

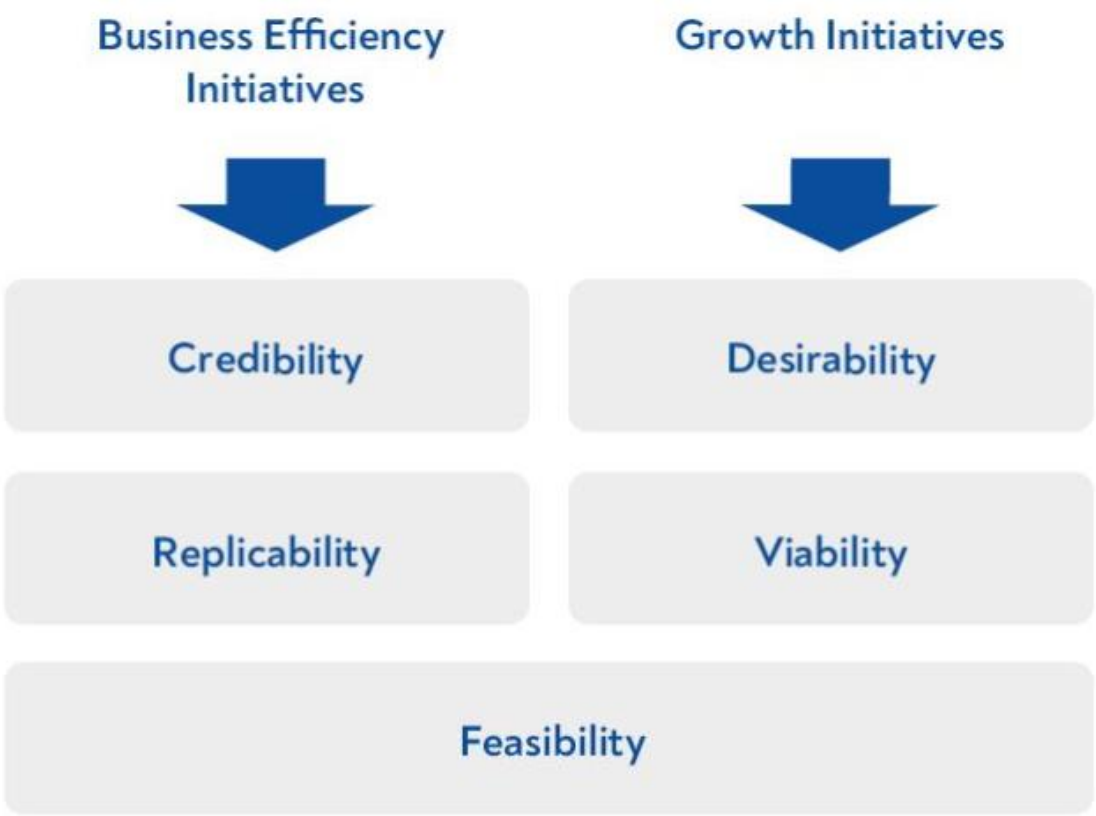



**Figure 10 The criteria for choosing pilot locations for business efficiency and growth initiatives. (Buchel & Davidson, 2019)**

**Credibility**

Credibility means that the pilot location must have certain skills and characteristic to legitimize the pilot project. Does the country have a certain level of complexity to be credible? Are there countries which are more fitting for piloting business efficiency initiatives as to growth initiatives? Selecting and conducting pilots well is essential to gaining the management commitment from the countries who are next in line for the solution implementation. Strong local management commitment shows in willingness to implement the change successfully and subsequently scale the new solution. (Buchel & Davidson, 2019)

The lack of local management commitment shows in lack of motivation to implement the solution which can then ultimately be a factor in the success of a pilot. Therefore managing local and global relationships by communicating and ensuring resource and support availability can ensure the management's commitment. (Buchel & Davidson, 2019)

**Replicability**

Replicability is the ability to create a transferrable template across locations as well developing an affective transfer methodology. This means that the one of the goals of the pilot is that the routines created during the pilot could be copied into other local units, therefore creating a common tool and methodology which could be globalized. (Buchel & Davidson, 2019)

As stated in the research companies should avoid drastic tailoring of a template as this may destroy the replicability of it. This can be avoided by choosing locations where the local management team is least likely to push for local adaptations. (Buchel & Davidson, 2019)

**Desirability**

For growth initiatives one important criteria for choosing the pilot location in desirability - will the new service or product add value to the customer? The very first thing which needs to be determined is the customer segment which type of customers are we targeting with this new solution and what is their need. (Buchel & Davidson, 2019)

Involving customers very early during the project and getting their feedback is essential in product development. Subsequently the feedback can help in defining the value proposition which addresses the value delivered to the customer and the problem we are intending to solve and how. (Buchel & Davidson, 2019)

There is no point in going through the trouble (and resources) of designing and developing a product or service that nobody wants in the first place. (Buchel & Davidson, 2019)

**Viability**

Viability answers the question on whether the initiative will be financially sustainable based on its economic model. Understanding the revenue streams and cost structure is essential. What are the most important costs associated with the growth initiative? Which are the most costly key activities and resources? These differentiate based on whether

the business is value driven or cost driven. In a cost driven business focusing on a low priced value proposition the cost structure is needed to determine e.g. the variable costs, fixed costs and economies of scale and scope. (Buchel & Davidson, 2019)

Understanding revenue streams is equally important when determining the viability of the new product or service. There are many different revenue streams such as subscription fees and asset sales, what is important is to understand are these streams reliant on volume, customer segments or product features. (Buchel & Davidson, 2019)

When discussing with customers the dialogue needs to be up front: what are the customers willing to pay and what are they already paying? What are their preferred payment method? Do they prefer to pay the entire amount at once, on monthly basis? Understanding how the revenue is built based on revenue streams is important in determining whether the initiative will eventually meet its profitability expectations. (Buchel & Davidson, 2019)

**Feasibility**

Feasibility is a criterion which applies to both business efficiency and growth initiatives. Feasibility means that the pilot initiative needs to meet the expectations of the stakeholders involved or affected by the pilot. Rather than focusing on economic growth, the target is to actually ensure that the pilot is implementable, acceptable by the stakeholders and is functioning reliably. Feasibility is an important factor both for business efficiency and business growth initiatives. (Buchel & Davidson, 2019)

As stated in the research for example Nestle piloted a global business efficiency program to align the current set of business process globally. The pilot locations were chosen from each of the three main geographical regions of the company. There was one location chosen from each of these regions. The reason as to why Nestle landed on these specific locations was because of the unit's revenue amount was just optimal enough to support the initiative but not too big to compromise the regions' financial results. This Way Nestle understood the high levels of uncertainty and risk when piloting a new business entitative. (Buchel & Davidson, 2019)

## 4.6 Service Validation and Testing

Service validation and testing is one of the functions in the ITIL lifecycle and it usually occurs during service transition. The purpose of service validation and testing is to plan, conduct and report on tests of new or changed services. Testing results are sent to change evaluation process to support the decision on whether the results should be acted on. (Bmc.com, 2016)

The service and validation process performs different types of tests such as:

- **Utility testing**. Is the service delivering the required functionality? Is the service "fit for purpose" (Pink Elephant, 2018, Bmc.com, 2016)

- **Warranty testing**. Is the service delivering the target levels of continuity, security and capacity? Is the service "fit for use" (Pink Elephant, 2018, Bmc.com, 2016)

- **Usability testing**. Is the service usable to the target user groups including those with limited abilities? (Bmc.com, 2016)

- **Contract and regulation testing**. Is the service compliant to applicable contract and regulatory requirements? (Bmc.com, 2016)

- **Operational readiness testing**. Are all support functions trained and staffed to support the new service? (Bmc.com, 2016)

Services need to be built so that the business customers will be enabled to perform better and/or with service features that reduce and remove user constraints. (Pink Elephant, 2018)

ITIL defines the process owner for Service Validation and Testing as the Test Manager. The role of the Test Manager includes making sure that the system components and overall systems meet their specified integration, interoperability, usability, documentation, operation and functionality requirements in the service transition phase. (ITSMprocesses.com, 2020)

### 4.6.1 Non-Functional Requirements of Service Design

Non-functional requirements or management and operational requirements are used to determine the requirements and constraints for IT services. These non-functional requirements should inspire developers to view the project goals more holistically. (HCI-ITIL.com, 2010) Categories of management and operational requirements are as follows:

- **Efficiency:** How much resources does the service consume?
- **Manageability:** Does the service run? Is it failing? How does it fail?
- **Capacity and performance**: What is the capacity level that we need?
- **Availability and reliability**: How reliable does the service need to be?
- **Installation**: How much time and effort does it take to install the service? Are installment procedures using automation?
- **Security**: What are the security classifications needed?
- **Controllability**: Can the service be managed, adjusted and monitored?
- **Continuity**: What is the level of recovery and resilience needed?
- **Maintainability**: How well can the service be corrected, adjusted, maintained and changed based on requirements that may come up in the future?
- **Measurability and reportability**: Is the service measurable and reportable on all its aspects?
- **Operability**: Does the service or application interrupt other services and/or applications and their functionalities?

These requirements for operational and management can be used to assign the quality attributes to the service being built and to design test plans for testing the compliance of the service to the management and operational requirements. (HCI-ITIL.com, 2010)

## 4.7 The Four Dimensions of Service Management

An organization's objective is to deliver value for its stakeholders, which is achieved by provisioning and the consumption of services. The four dimensions of service management are relevant to achieve desired outcomes to do this organizations should consider all elements of their behavior. However too often organizations' focus is on a specific area of the initiative, while neglecting all other relevant aspects. (Axelos Limited, 2019)

Process redesigns may be initiated without properly considering aspects such as, partners, people and technology or technology solutions might be implemented without caring of the processes or people which the technology should support. None of the service management aspects can deliver the desired outcomes when considered in isolation. **The four dimensions defined by ITIL are people and organizations, information and technology, partners and suppliers and processes and value streams.** The four dimensions provide a holistic approach and present all relevant perspectives to service management. (Axelos Limited, 2019)

In the absence of consideration of these four elements services may become undeliverable services, or services not meeting their expectations such as of quality and efficiency and result in duplication of efforts, wasteful work or not being aligned with other units within the organization. (Axelos Limited, 2019) The four dimensions of service management are visualized in the figure below:

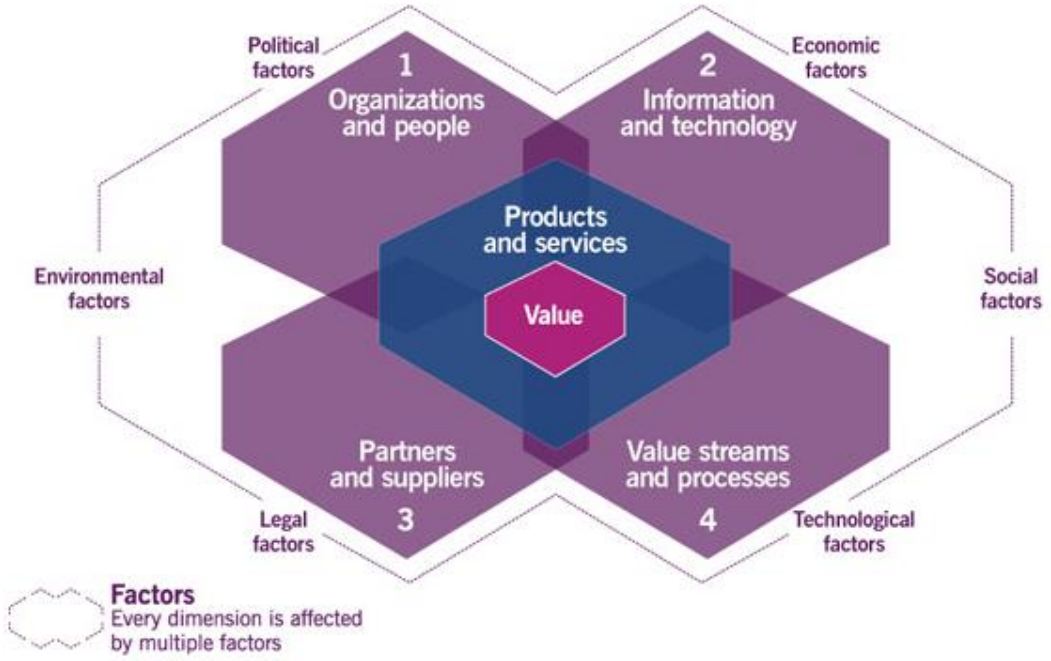



**Figure 11 Service Management's four dimensions (Axelos Limited, 2019)**

The four dimensions apply to each service that is being managed and therefore it is important to consider all perspectives for every service. Each dimension is also impacted by multiple external factors, these should be also taken into account when managing and improving services. These factors can also be seen in figure 11. (Axelos Limited, 2019)

### 4.7.1 People and Organizations

The first dimension is people and organizations. Organizations need a culture where its objectives are supported as well as having the right level of competency and capacity in its workforce. The leaders of the organization should encourage the people to work in desirable ways. However, the organizations way of carrying out its work is ultimately what creates shared attitudes and values and shape the organization culture. (Axelos Limited, 2019)

People, customers, consumers or any other stakeholder groups involved in the service relationship are the key elements to this dimension. It is essential to pay attentions to the competencies and skills within a team and also to the leadership and management

styles, and collaboration and communication skills. As organizations are evolving it is essential that individuals competencies and skills evolve to understand the interfaces with others in their organization. To ensure efficient amount of coordination and collaboration, the level of knowledge of an individual should be broad across multiple layers while still having deeper knowledge on certain fields. Subsequently, every individual within an organization should understand their contribution to creating value for the company, the customers and other stakeholders. This is an effective method for breaking organizational silos. (Axelos Limited, 2019)

Thus, the people and organization dimension of service is about roles and responsibilities, organizational culture, structure, competencies and staffing. All of these are related to service creation, delivery and improvement. (Axelos Limited, 2019)

### 4.7.2 Information and Technology

The second dimension of service management is information and technology, which includes the information and technology needed for managing services and technologies which are required. These technologies can be for example, knowledge bases, inventory systems and communication systems. (Axelos Limited, 2019)

This dimension includes managed, created and used information during service provision and consumption and the enabling technologies of this information. The nature of information and technologies depends on the service. One key consideration for this dimension is about the exchange of information between different services and components. Information architecture of multiple services needs to be constantly optimized while considering service reliability, availability, timeliness, accessibility, relevance and accuracy of the information that is being exchanged between services and provided to users. (Axelos Limited, 2019)

There are multiple challenges to information management. Other countries and industries might have regulations that constraint data collection and management or present security and regulatory compliance requirements. Most of the services these days rely on IT. The following questions are what organizations may ask when using a technology for example for designing or operation of a product or a service. (Axelos Limited, 2019)

- Are there any regulatory or other compliance issues with this technology to the companies policies or information security policies?

- Are there compatibility issues with this technology to the current technology architecture in the organization?

- Will this technology keep being viable in the future?

- Will this technology allow other capabilities which could be leveraged to other products and services?

The culture of the organization affects highly on the technologies it will implement. In addition to culture – nature is also a factor which impacts this decision-making.

### 4.7.3 Suppliers and Partners

Suppliers and partners is the third dimension of service management. The key message of this dimension is that organizations build relationships with other companies who are involved in development, design, support, delivery and/or continual improvement of services. Each organization is dependent to some extent on other organizations and service providers. (Axelos Limited, 2019)

Organizations have different forms cooperation between them which may include diverse levels of formality and integration. These relationships can be either formal with clear responsibility separation or flexible relationships where both organizations share the same risks and goals and cooperate to achieve their desired targets. (Axelos Limited, 2019)

Organizations might use partners and suppliers to provide other resources while the organization focuses on its core competencies. Other companies might want to rely on their own resources as much as possible while minimizing the amount of outsourcing and partnership. There are of course many different variations of these relationships besides these two examples. (Axelos Limited, 2019)

During the last decade many companies have started to offer different capabilities or resources such as infrastructure, platforms and software (“as a service”). These companies use bundling to package their services and goods into one offering that is consumed as a utility and is accounted as an operating expenditure. Thus, making companies in less of a need to invest in costly technical resources that need to be accounted as asset expenditure. (Axelos Limited, 2019)

### 4.7.4 Processes and Value Streams

This is the fourth dimension of service management and it is about determining the workflows, controls, activities, and procedures required to achieve agreed targets while delivering value to all stakeholders. The key message is in regards to the way of working in multiple parts of the organization in a coordinated and integrated matter while enabling value creation through services and products. (Axelos Limited, 2019)

Value stream is a set of activities the company executes to deliver services and products to its customer and consumers. Organizations can benefit from identifying the critical activities needed to improve performance and construct them in a form of value streams. This enables the organization to have a clear vision of what it delivers and how. This way the company can achieve overall visibility into how it should improve its processes to eliminate unnecessary activities, waste. (Axelos Limited, 2019)

To increase the amount of value adding activities the company might need to create new activities or rebuilt the existing ones, this may include adopting new technologies such as automation technologies or working in new ways to improve the efficiency and value in the user experience. (Axelos Limited, 2019)

The purpose of processes in this dimension is to ensure that the organization has the ability to implement the new or changed processes. In addition relevant stakeholders should be identified such as process manager, process owner and practitioner. Processes should be developed according to standard practices and their accountability should be documented. (Ashford Global, 2020)

The four dimensions provide a holistic approach for service management. Undoubtedly there are also external factors which can create uncertainty and constraints to the service provide (PESTLE is on example of a framework used to examine the different external factors which might influence service management). (Axelos Limited, 2019)

## 4.8 Change Management

Organizational changes on a large-scale have always been difficult to implement. Todays' highly competitive market requires companies to react quickly by implementing new change initiatives. (Basford & Schaninger, 2016)

Organizational change management is a practice to ensure smooth and successful change implementation while achieving lasting benefits by managing the people aspects of the change. (Axelos Limited, 2019)

People are an essential element to the success of the change whether it is a change to the peoples way of working, their roles or a change to the organizations' structure, practice or the introduction of a new technology or a service. (Axelos Limited, 2019)

Change management is practice which aims to reduce resistance by providing awareness, training and other practices to ensure successful change implementation. Regardless of the scope of the change certain activities must take place to address the human factors and transition to the new state within the organization. (Axelos Limited, 2019)

1. **Relevant and clear objectives.** The goals and objectives of the change must be clear to the stakeholders. The value of the change initiative needs to be seen. (Axelos Limited, 2019)

2. **Systematically addressing the human side.** Inevitably significant transformations create "human issues" when new skills and capabilities need to be developed, roles and responsibilities change and employee resistance and uncertainty emerges. A formal approach for addressing and managing change should be adopted early on during the transformation by engaging all relevant stakeholders. The change management approach should be implemented into the new

program already in the design phase, while taking into account the history, capacity and readiness for change. (Jones et al, 2004)

3. **Starting at the top.** First the leadership team should embrace the change to motivate and challenge the rest of the organization. This is essential as the leadership team will be the one who will be turned to for strength, direction and support. Executive teams who are aligned and work together are well positioned for success. (Jones et al, 2004)

4. **Involve every layer.** Large-scale transformations affect various layers of the organization. Nominating leaders across the organization is essential, as they can affect the change cascading through the entire organization. These leaders must be aligned with the vision of the change, equipped to execute their responsibilities and motivated for that change to happen. (Jones et al, 2004)

5. **Making the formal case.** Inherently individuals are rational and will question as to what extent is the change necessary and to what level they are willing to commit to the transformation, thus looking at the leadership for answers. Articulating a formal case for change is essential for leadership-team alignment. (Jones et al, 2004)

6. **Communicating the message.** Very often the leaders of the change believe that others understand the need for the change and understand the issues as clearly as leaders do. Change programs should have a clear message which is communicated in an practicable and inspirational way. (Jones et al, 2004)

7. **Assessing the cultural landscape.** Cultural diagnostic is essential in change management and it can be helpful in identifying major problems, conflicts, behavior, culture and thus the organizational readiness for change. (Jones et al, 2004)

8. **Preparing for the unexpected.** Change programs usually don't go according to plan and it is essential to continuously reassess the change impact on the organization. By utilizing real data and information to feed the decision-making

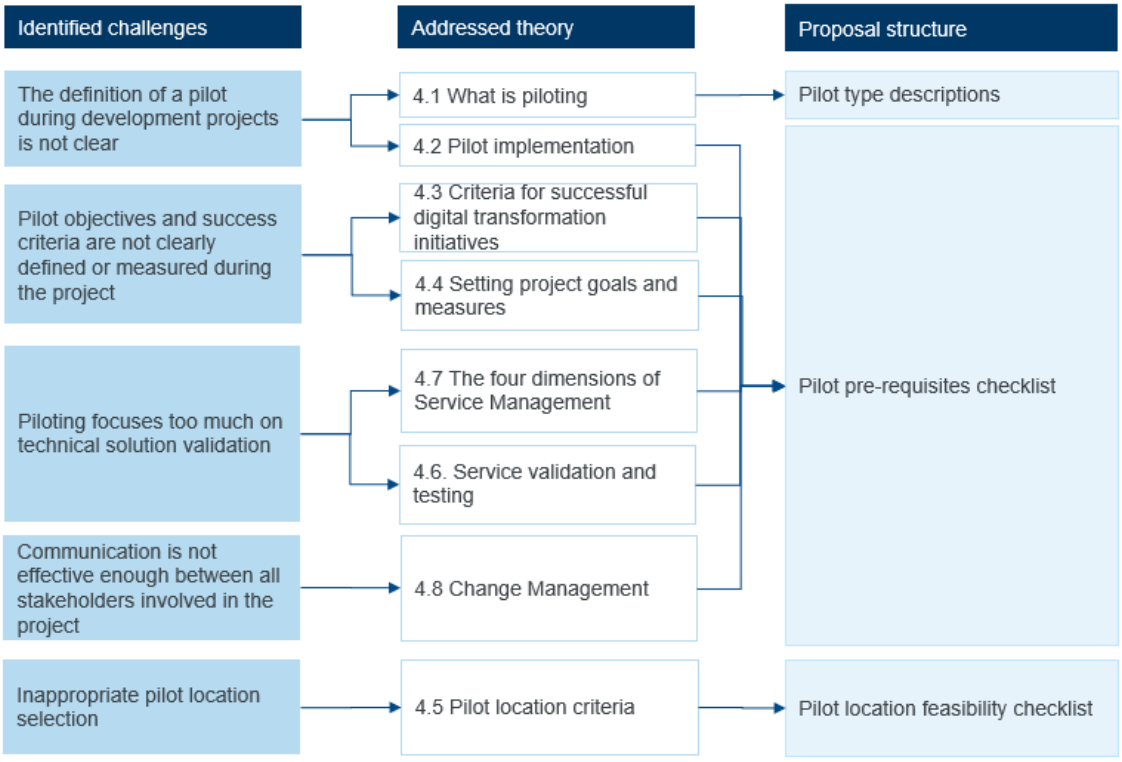
process, change leaders can adjust when needed to drive results and maintain momentum. (Jones et al, 2004)

Many change initiatives fail, when after some time people return back to the old ways of working. Organizational change requires continuous reinforcement on the value of change by communicating regularly and addressing the consequences and impacts of the change. (Axelos Limited, 2019)

## 4.9 Summary of Available Knowledge and Best Practices

Table 9 below describes the theory topics presented in this chapter which are addressing the challenges identified in chapter 3. Based on the key findings from the CSA and the theory topics a structure for the piloting framework was proposed. This can be seen in table 9 in the third column “proposal structure”. The outcome of the first draft of the proposal is presented in the next chapter.

**Table 9 Correlation between CSA findings, theory topics and proposal structure**



As seen in table 9 the proposal structure consist of three parts: pilot type descriptions, pilot prerequisite checklist and pilot location feasibility checklist. The following chapter describes the process for building the initial proposal, as well as presents each element of the initial proposal.

# 5 Building the Proposal

In this chapter the process for building the initial piloting framework is described. During the first round of interviews multiple piloting challenges were repeated frequently which are affecting the success of a pilot and the deployment phase which follows after piloting is completed. In the second round of interviews/workshops the structure for the proposal was finalized. In addition to this the role of the interviews was to gather content for the proposal. Additional activities which supported in constructing the proposal besides the interviews were analyzing internal company materials and reading about literature best practices as presented in chapter 4.

## 5.1 Process for Building the Initial Proposal

The process graph below gives a high level overview of the process steps which supported in building the preliminary proposal. CSA is presented in chapter 3 and theory in chapter 4. The last two process steps in dark blue are presented in this chapter.

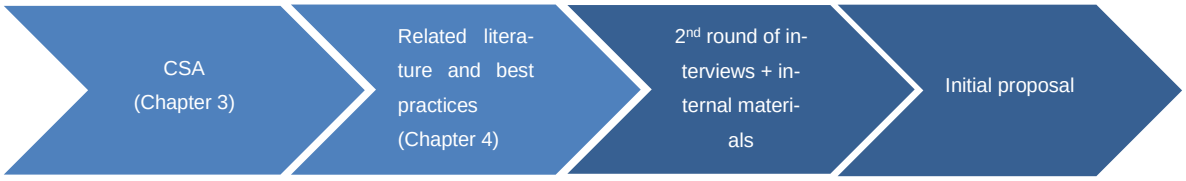



**Figure 12 High level overview of steps for building initial proposal**

Table 10 below presents the workshops and interviews which were used to define and gather content for the preliminary version of the piloting framework, as well as the topic which was discussed during the discussions. There was a total of two workshops and five interviews.

**Table 10 Second data round for building the proposal**

| | Participant / Role | Data Type | Topic, Description | Date, Length | Documented as |
|---|---|---|---|---|---|
| | Data 2, For Proposal Building | | | | |
| **9** | Head of Ecosystem Business | MS Teams | Workshop for determining proposal structure, format and content | 15.3.2020 60 minutes | Field notes and re-coding |
| **10** | Business Development Director | MS Teams | Discussion on content for the piloting framework | 16.3.2020, 60 minutes | Field notes |
| **11** | Head of Digital Support Operations | MS Teams | Discussion on end-to-end process mapping for digital solution development projects | 8.4.2020, 30 minutes | Field notes |
| **12** | Technology and Innovation Consultant | MS Teams | Discussion on end-to-end process mapping for digital solution development projects | 8.4.2020, 60 minutes | Field notes |
| **13** | Director, Customer Solution Engineering | MS Teams | Discussion on content for the piloting framework | 8.4.2020, 30 minutes | Field notes |
| **14** | Test Manager | MS Teams | Discussion on testing as part of digital solution piloting | 8.4.2020, 30 minutes | Field notes |
| **15** | Head of Ecosystem Business | MS Teams | Workshop on building validation task list and pilot location criteria list | 24.4.2020, 60 minutes | Field notes |

The purpose of the second round of interviews (rows 10-15, table 10) was to determine the idea and structure for the proposal with company experts as well as to gain additional content for the preliminary framework for the case company.

Row 9 in table 10 shows that a workshop was held together with the company representative to determine the structure of the framework. During the workshop with the company representative (Row 9) it was concluded that the most beneficial outcome of the proposal would be a set of practical tools or templates which would be used by the development project team.

Thus, after the first workshop (row 9) the structure of the outcome consisted of the following items: (1) Pilot type descriptions, (2) A pilot location feasibility checklist, (3) Pilot prerequisites checklist. The decision to develop those three items for the proposal was based on the findings from the current state analysis, the personal workload that each proposal item requires and their importance to the case company.

Table 11 gives an overview of each proposal item, its content and purpose.

**Table 11 Contents of the preliminary framework**

| Document | Description |
|---|---|
| **Pilot type descriptions** | The pilot definition document is a description of different pilot types, what, why and when they are used, their prerequisites and typical completion criteria. The purpose of this document is to clarify when are certain pilots needed and why and based on what criteria they are successfully executed. |
| **Pilot location feasibility checklist** | The pilot location feasibility checklist is a list of questions in an excel format. The questions have been divided into two categories 1. Questions intended primarily for the global team to explore the different characteristics of the FL 2. Questions intended primarily for the FL's to answer while choosing customers as part of the pilot. The purpose of the pilot location feasibility checklist is to support both the global project team as well as the FL organization in the activity of choosing a feasible pilot location. |
| **Pilot prerequisites checklist** | The pilot prerequisites checklist is a tool designed to support the local development project team by providing questions relating to key activities during a pilot project as well as example practices to execute these activities. |

As seen in table 10 Item (2) pilot location feasibility checklist, (3) Pilot prerequisites are both designed to be used as templates or tools for guiding and supporting the project team in executing the pilot. Item (1) Pilot type descriptions is the first item of the proposal as it is intended to be the "introduction" for piloting as it explains different pilot types their prerequisites and typical goals and success criteria. Next all proposal items are presented and described in more depth.

## 5.2 Pilot Type Descriptions

As identified in the CSA the generic usage of the word "pilot" can be misleading. During the first and second round of interviews, it was recognized that there are multiple pilot types and their requirements. Thus, as part of the study, it was seen as necessary to clearly define different pilot types, their prerequisites and typical goals and completion criteria per pilot type.

Below is a recap of the challenge identified in the CSA relating to this topic:

**Table 12 Recap of the challenge identified in the CSA**

| | |
|---|---|
| The definition of a pilot during development projects is not clear | • Pilots are often treated as prototypes or PoC's |

During digital solution development projects, five different pilot types can be executed, each has a specific purpose, prerequisites and goals. The pilot content and what is planned to be validated should be specified prior to selecting the pilot types and the number of pilots. The pilot types and the number of pilots executed naturally affects the success of the development project, thus these should be clearly specified and considered case-by-case. Below are some questions that could be considered prior to making this decision.

**Table 13 Questions for considering pilot type and quantity (partially from company materials)**

| **Questions** |
|---|
| What are the targets of the pilot project? What are we targeting to validate? Are we targeting to validate the full-chain process or only e.g. the installation process or perhaps only the technical component? |
| Is the success of the pilot dependent e.g. on:<br>- The solution delivering its required functionality?<br>- The solution delivering the target levels of continuity, security and capacity?<br>- The solution being usable to the target user groups including those with limited abilities?<br>- The solution being reliable in a real operating environment e.g. when having interfaces to the building?<br>- The solution being compliant to contract and regulatory requirements regardless of their geographical location?<br>- The readiness of the company's functions to support the solution delivery, installation and operation in final use?<br>- The supporting functions being trained and staffed?<br>- Having the right tools in place to support the end-to-end processes? |
| How quickly is the solution expected to ramp up? |
| Are there new manufacturing technologies implemented, tight tolerance, new manufacturing facility? |
| Are there new installation or maintenance methods? |

Based on the developed solution, project schedule, budget etc. the pilot types, targets and scope are specified for the project. Table 14 below is one of the outcomes as part of the preliminary proposal for the case company (a description of different pilot types, their prerequisites and typical goals and completion criteria).

### Table 14 Pilot type descriptions

| Pilot type | What, why & when | Prerequisites | Typical goals and completion criteria |
|---|---|---|---|
| Customer co-creation pilot | Customer co-creation pilots refer to a case where a solution is installed into customer's use before the design is frozen.<br><br>**Testing that the solution is fitting for customer's use and company operations.**<br><br>Occurs early during a development project.<br><br>A customer co-creation pilot is like a PoC. There is no product official product documentation or tooling in place. The main objective is to test whether the solution brings value to the customer's business, thus allowing to make changes and adjustments to the solution.<br><br>Requirement level for customer co-creation pilots must be defined in order to evaluate whether solution pilot fulfils the requirement. | 1. Frontline and customer must be aware that the solution is not final and the quality might not be as high as in the final product/service.<br><br>2. Use of solution does not compromise users or field personnel safety. Mandatory safety certificates must be in place and risk analysis must be performed.<br><br>3. Supply line is aware and has resources to support manual process in case needed.<br><br>4. Solution project has funding for material and possible later retrofits.<br><br>5. Solution project has resources to support installation, maintenance and trouble shooting.<br><br>6. Customer is engaged and open to give feedback. | 1. Customer perceives value from the solution.<br><br>2. Validated learning. The result is learning that is evidence-based and actionable, leading to genuine product improvements before the solution is released to production. |
| Technical pilot | **Technical pilot refers to a case where a new component / sub-system / module is installed in an existing assembly in customer's premises replacing the existing one.** Technical pilots are used to validate the reliability of the component as a part of an entire equipment in real operating environment after the solution design is frozen. Full-chain process validation is out of scope.<br><br>Especially when the solution volume is expected to ramp up quickly and depends on building interface and installation. | 1. Customer and frontline agree.<br><br>2. Available sites where the new component/sub-system/part can replace an existing component/sub-system/part -interface compatibility ensured.<br><br>3. Solution project has funding for material and possible later retrofits.<br><br>4. Solution project has resources to support installation, maintenance and trouble shooting. | 1. Component/sub-system/module operates in the real-operating environment as expected and meets the requirements. |
| Software pilot | Validating that a new software release meets expectations.<br><br>Applies to planned software releases and to containment & retrofit release.<br><br>SW piloting must be completed and passed prior customer commitments | 1. Frontline agrees.<br><br>2. Verification done, i.e. release testing has passed the acceptance criteria. | 1. Software meets the requirements. |
| In-house pilot or full-chain process pilot in the development companies premises | Validating the functioning of a solution in the company (not customer) premises – can be partial or full-chain process pilot (order, delivery, installation, onboarding, maintenance) based on agreed targets.<br><br>Benefit: The company is in control of the schedule. | 1. Frontline agrees.<br><br>2. Processes have been developed and verified (including feedback processes).<br><br>3. Frontline is aware that the project is in piloting phase and is aware of the commitment needed from their side.<br><br>3. Frontline and customer are aware of the project targets. | 1. Validated learning. The result is learning that is evidence-based and actionable, **leading to genuine process improvements and small product adjustments in continual improvement activities.**<br><br>2. Learnings can be applied and used for improving deployment efficiency. |
| Full-chain process pilot in customer premises<br><br>*(Also known as; E2E process pilot or process pilot)* | Piloting in customer premises is the classic way of piloting. The target is to validate full-chain process of a solution delivery, and operation in final use, from ordering to engineering, manufacturing, transportation, storage, installation and maintenance.<br><br>Validate full-chain process of a solution delivery and operation from ordering to engineering, manufacturing, transportation, storage, installation to final use.<br><br>Scope: Full chain process validation – from order to commissioning. | 1. Frontline and customer agree.<br><br>2. Frontline and customer are aware that the project is in piloting phase.<br><br>3. Frontline and customer are aware of the project targets.<br><br>4. Processes have been developed and verified (including feedback processes). | 1. Validated learning. The result is learning that is evidence-based and actionable, **leading to genuine process improvements and small product adjustments in continual improvement activities.**<br><br>2. Learnings can be applied and used for improving deployment efficiency.<br><br>3. Solution is monitored and operates against the set targets. Fit for use and fit for purpose. |

As seen in table 14 the pilot type description sheet is divided into four columns. The first column labels the pilot type. The second column gives an overview into what is the definition of that pilot type, why should that pilot type be executed and when. The third column gives generic and the most common prerequisites that can be applied regardless of the development project. Same goes for the fourth column which describes the most generic success criteria's or goals for that specific pilot.

Table 14 was constructed based on internal materials, data 1 & 2 interviews/workshops and related literature. Below is a visualized representation of the inputs which affected the outcome of the first item of the proposal:

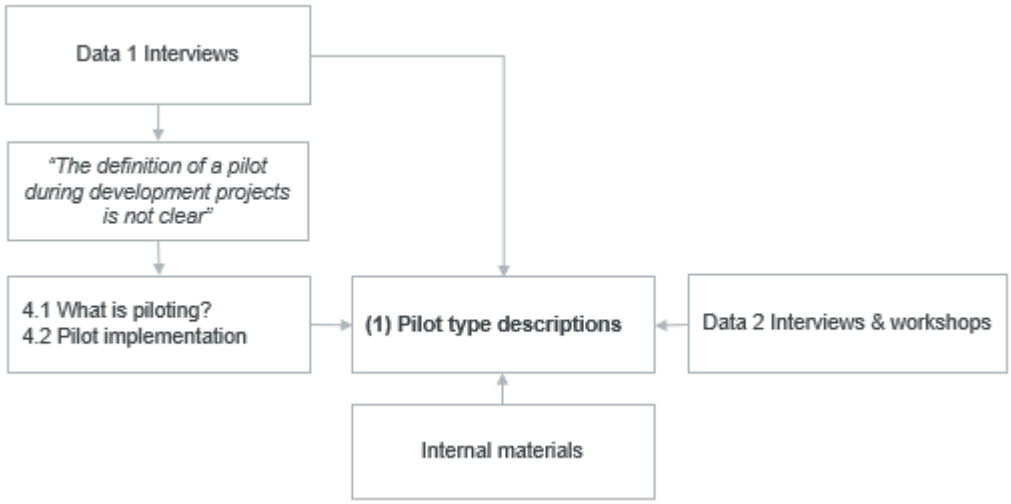



**Figure 13 Inputs for (1) pilot type descriptions**

As seen in figure 13 there were four main inputs which affected the outcome of the pilot prerequisites checklist. These were the first data round and its findings marked as a quotation, related theory topics, internal materials and all interviews and workshops in the second data round.

## 5.3 Pilot Location Feasibility Checklist

The pilot location feasibility checklist document was created based on the challenges and data gathered during the CSA. During the first round of interviews the challenge of

choosing the right pilot locations was frequently mentioned. Also, in addition there were multiple comments on the effects of inappropriately managing this process. ‘

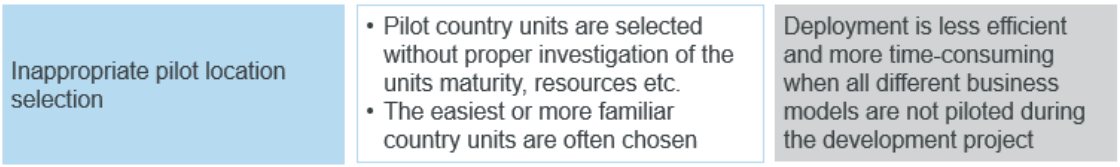



**Figure 14 Recap of the challenges identified in the CSA addressing pilot location selection**

In addition to the outputs from the first round of interviews, the second round of interviews and theory addressing this topic (Chapter 4.5) greatly impacted the outcome of this part of the proposal. Table 15 shows the initial version of the pilot location feasibility checklist extracted from an excel sheet.

### Table 15 (2) Pilot location feasibility checklist

| Item | Question audience (The team for which the question is intended) | Operational/ Customer related | Question | Answer (yes, no, not known yet) | | Further description of the answer |
|---|---|---|---|---|---|---|
| | | | | *Insert customer/country here* | *Insert customer/country here* | |
| **1** | Global, FL | Operational | **Does the FL management team strongly support this pilot?** | | Not known yet | |
| **2** | Global, Area, FL | Operational | **Is the FL practicing the company's' methodologies?** | | Yes | |
| **3** | Global, Area, FL | Operational | **Does the FL have the critical key roles in place needed for pilot success?** (FL PM, etc..) | | No | |
| **4** | Global, FL | Operational | **Does the FL understand the pilot objectives?** *(Why we are piloting, what are we piloting, what is the readiness of the solution, what is the project schedule, what is the scope of the pilot, what is the level of investment and commitment needed from FL side?)* | | | |
| **5** | Global, Area | Operational | **Does the area team have the capacity to support the pilot implementation?** | | | |
| **6** | Global, Area, FL | Operational | **Does the FL have necessary prerequisite tools and processes to make this pilot a success?** | | | |
| **7** | Global team, Area team and FL | Operational | **Does the FL have the resources available to implement the pilot?** *(Right people, funding?)* | | | |
| **8** | Global team, Area team and FL | Operational | **Does the FL have any must do's which need to be considered in the pilot?** *(Country legislation regarding e.g. certifications, regulatory compliance requirements, data security and collection regulations or time difference between global and FL)* | | | |
| **9** | Global, Area, FL | Operational | **Do the FL environment support the pilot objectives?** *(FL size, structure, local market conditions etc.)* | | | |
| **10** | Global, FL | Operational | **Is the FL not too similar to other FL's under consideration?** *(Will this FL be different enough to ensure new learnings, but not too different to compromise pilot success? Things to consider; solution operating environment, FL structure, market conditions)* | | | |
| **11** | Global | Operational | **Is the FL experienced in piloting global solutions?** | | | |
| **12** | FL | Customer | **Does the customer have an optimal level of status on a local/global level?** *(Influence level, level of risk if the pilot fails?)* | | | |
| **13** | FL | Customer | **Is there an innovative lead customer willing to test the first product or solution?** *(Early sign-off of customer willing to work with the team, customer is a proven innovator/early adopter?)* | | | |
| **14** | FL | Customer | **Is this global customer willing to provide on-going feedback?***(Customer can make the time needed to provide feedback?)* | | | |
| **15** | FL | Customer | **Does the customer understand the solution readiness?** | | | |
| **16** | FL | Customer | **Does the customer and end-users have the skills and knowledge to use the solution?** *(Other digital solution implementation background?)* | | | |
| **17** | FL | Customer | **Does the pilot site represent the real-life operating environment where the solution will be ultimately used?** (In terms of end-user amount, monitoring capacity needs, building traffic etc.) | | | |

As seen in the table the initial version of the checklist consists of 17 questions. Each question is specified based on the audience and the question topic (operational/customer). Depending on which category the question falls into, it is also highlighted in light orange or light green.

The purpose of these categorizations is to clarify to the audience who is responsible for answering these questions and whether the questions are intended to support the global team in choosing the FL's or intended for the FL to use as guidance when choosing a customer for piloting. The figure visualizes the process:

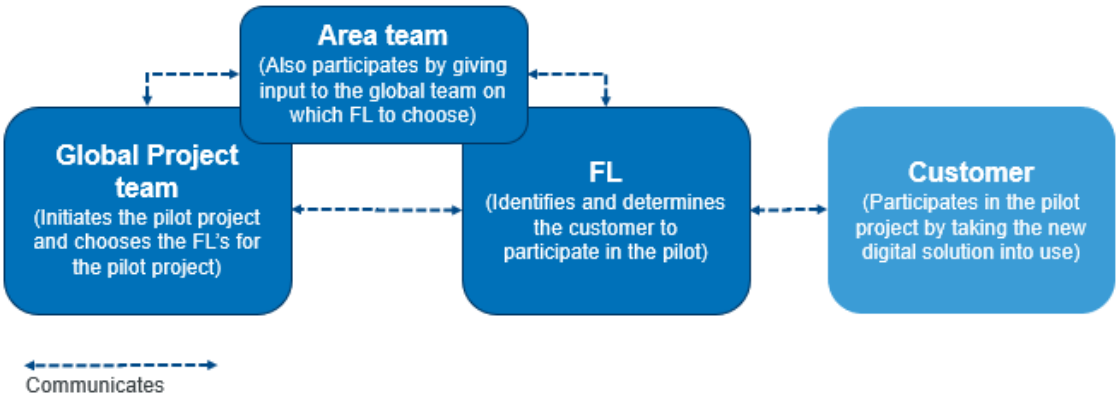



Figure 15 Process for choosing a pilot location

As seen in the figure above there are four teams which are involved in the entire process of determining the pilot location, whether it is to choose the FL or customer. The questions in the checklist were designed to be yes/no questions. A new column may be added for each FL/customer under consideration, making the comparison of the FL's/customers feasibility easier.

However, when piloting a new digital solution, the pilot is not always done in customer premises. Very often, at least in the beginning of the pilot when the solution is not in the optimal level of development multiple in-house installations are executed. In-house piloting means that the solution in implemented in the company's premises. Only when the solution and the processes reach a certain stage in terms of maturity, is the customer usually targeted for a customer co-creation pilot.

During the CSA there was special emphasis on the challenges of choosing the right FL to pilot in, rather than challenges in choosing a customer to pilot with. The reason for this is that when piloting a new digital solution there are multiple operational changes which come with it such as, changes to the existing processes and IT tools to enable e.g. ordering and selling of the new solution.

The FL's vary immensely and share different organizational structures, cultures, IT tools, people, roles and overall maturity levels. In addition to this different geographical positioning also means different market situations and behaviors. Thus, the emphasis of this proposal is more on ensuring the right FL is picked for the pilot.

In addition to addressing the challenge of choosing the right pilot location. This part of the proposal also aims to address other challenges identified in the CSA such as: the lack of communication on pilot intentions, solution readiness and commitment needed from the FL. Rows 4 and 15 intend to ensure that the FL/customer under consideration is communicated about - and aware of the readiness of the solution and processes.

The figure below describes the inputs which affected the outcome of the (2) pilot location feasibility checklist.

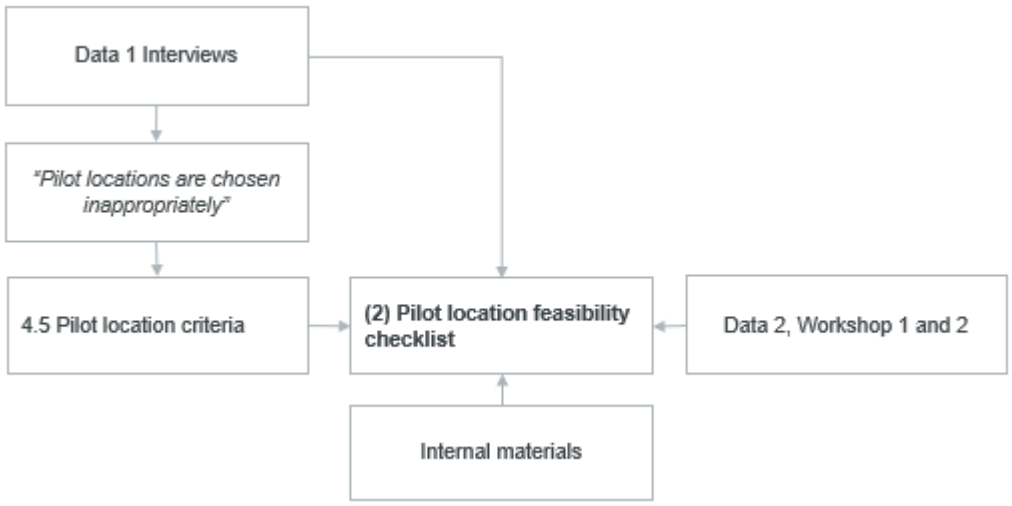



**Figure 16 Inputs for (2) pilot location feasibility checklist**

As seen in figure 16 there were four main inputs which affected the outcome of the pilot location feasibility checklist. These were the first data round and its findings marked in a

quotation, related theory topics, internal materials and from the second data round workshop 1 and 2.

## 5.4 Pilot Prerequisites Checklist

The third part of the proposal is the pilot prerequisites checklist. This checklist is intended to be used from the preparation stages of the pilot up until the closing of the development project. The prerequisites sheet is a list of questions and example activities intended for the project team to use. These questions have been formed based on the first and second round of interviews, internal materials and theory best practices.

The outcome of the pilot prerequisites checklist can be seen in the table below:

**Table 16 (3) Pilot prerequisites checklist 1/2**

| | Pilot phase | Question | Example activities |
|---|---|---|---|
| **1** | Pilot prepe-ration | **Have we decided the pilot FL's based on specific criteria?** (The aim should be that most business models would be piloted dur-ing a development project to create an feasible roll-out template) | 1.Utilize the pilot location feasibility checklist (See sheet 3) |
| **2** | Pilot prepe-ration | **Have we defined the prerequisites around connectivity for each location where the digital solution will be installed?** *(Connectivity needed in building/shaft?)* | 1. Having detailed connectivity re-quirements (specific enough to en-able fast judgement on whether the pilo enivironment suites the solu-tions' reliable operation)<br><br>2. Having a detailed connectivity requirement architecture |
| **3** | Pilot prepe-ration | **Have we ensured that the pilot locations represent the real-life operating environment where the solution will be ultimately used so that we can truly validate that the solution meets the needs of the users?** *(Represent the real-life operating environment in terms of the amount of end-users, monitoring capacity needs, building traffic, connectivity etc.)* | 1. Scenario Analysis<br><br>2. Creating detailed use cases |
| **4** | Pilot prepe-ration | **Are we investigating that the pilot locations' environment meets the required connectivity prerequisites?** *(These vary based on building type, shaft build, geographical loca-tion)* | 1. Site-survey<br><br>2. Connectivity survey |
| **5** | Pilot prepe-ration | **Have we defined what data is needed to assess service quality? Has the remote monitoring capabilities been validated to pro-vide this data reliably?** *(This is 56ecessary for service managers to understand how the ser-vice is operating and to identify problems)* | 1. Nominating a Service Manager<br><br>2. Having a service support model<br><br>3. Service level requirements |
| **6** | Pilot prepe-ration | **Have we truly planned what needs to be validated furing piloting in order to deliver value to our customers?** *(Considering what is the customer buying and what is the value that the customer is buying with our solution)* | 1. Specifying the pilot targets and completion criteria<br><br>2. Identifying stakeholders and their expectations (Stakeholder Analysis) |
| **7** | Pilot prepe-ration | **Have we ensured that we have set-up proper feedback gathering processes in place to maximize pilot learnings and to support deployment team with solution roll-out?** | 1. Identifying feedback loops for customers, end-users and other stakeholders<br><br>2. Having a standard, detailed PSR (Pilot Site Review) template |
| **8** | Pilot prepe-ration | **Have we defined standard communication practices to ensure regular and transparent communication between all stakehold-ers involved during the pilot?** | 1. Creating an email address for the piloted solution (to have a sin-gle point of contact to provide sup-port for partners, customers and frontlines)<br><br>2. Establishing MS Teams sites for all stakeholders or specific groups<br><br>3. Having a master list for providing e.g. customer and frontline contact information *(See sheet "pilot case list template")* |
| **9** | Pilot prepe-ration | **Do we have the key roles and competencies in place to ensure pilot success?** *(e.g. Service Manager, Test Manager)* | 1. Nominating key roles in project team (e.g. Service Manager, Test Manager)<br><br>2. Having the key roles in frontline<br><br>3. Executing a stakeholder analysis |

**Table 17 Pilot prerequisites checklist 2/2**

| | Pilot phase | Question | Example activities |
|---|---|---|---|
| **10** | Pilot prepe-ration | **Have we set up pilot success criteria and KPI's which are action-able?** | 1. Having detailed targets to judge the success of the pilot (functional, non-funtional and operational) |
| **11** | Pilot prepe-ration | **Have we defined the necessary activities to onboard end-users, customers and other stakeholders?** | 1. Identified stakeholder groups<br><br>2. identified onboarding effort<br><br>3. Developed onboarding pro-cesses |
| **12** | Pilot prepe-ration | **Have we defined detailed use cases?**<br>(These should be documented somewhere which is accessible later on to the project team) | 1. identifying customer needs<br><br>2. Customer co-creation efforts |
| **13** | Pilot execu-tion | **Are consistently reviewing and the documenting the pilot learn-ings?**<br>*(What are the things which the deployment team should consider when deploying the solution further?)* | 1. Establishing standard and sys-tematic documentation and com-munication practices |
| **14** | Pilot execu-tion | **Have we as the project team established standard documenta-tion and communication practices?** | 1. Project team SharePoint<br><br>2. Project team MS teams site<br><br>3. Backlog for activities |
| **15** | Pilot execu-tion | **Are we monitoring and managing quality KPIs, risks and oppor-tunities and push for continuous improvement?** | 1. Developing and managing dash-boards and report tools<br><br>2. Identifying monitoring needs and efforts<br><br>3. Onboarding monitoring teams (e.g. KITOC, DMS) |
| **16** | Pilot execu-tion | **Have we ensured collective learning and knowledge accumula-tion?** | 1. Identify needs for new knowledge |
| **17** | Pilot execu-tion | **Have we validated that the customer perceives value from the solution in the same way we expected?**<br>(Customers sees the benefit of our solution over the competitors?) | 1. Post installation interview<br><br>2. Online survey |

As seen in the preliminary outcome above, the prerequisite list is a 17-question list categorized to be reviewed during pilot preparation and for the pilot execution stage this can be seen from the second column. The third column represents the questions. The fourth column represents example actions which could be taken to achieve the prerequisite, these example actions are also based upon the practices identified during data 1 and data 2 and internal documentation. The process for achieving this outcome  is visualized in the figure below:

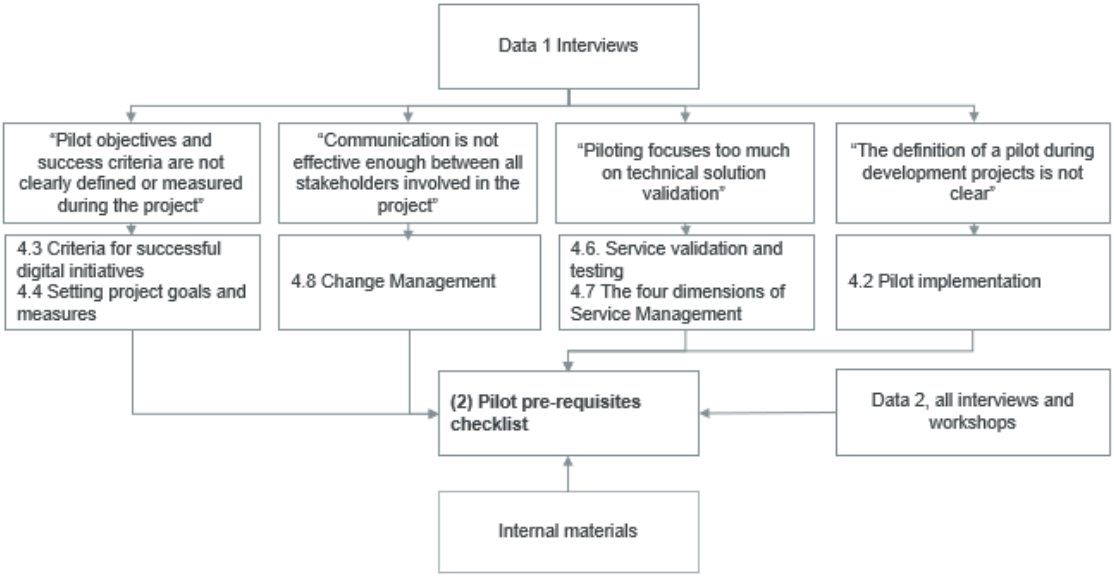



**Figure 17 Inputs for (3) Pilot prerequisites checklist**

As seen in figure 17 there were four main inputs which affected the outcome of the pilot prerequisites checklist. These were the first data round and its findings marked as quotations, related theory topics, internal materials and all interviews and workshops in the second data round.

## 5.5 Expected Benefits of the Proposal

The objective of this thesis was to propose a piloting framework which would support in piloting new digital solutions in global B2B environments. When reflecting on the outcome of this thesis and the expected benefits of this proposal I believe that the outcome meets the objectives. The expected benefits for the proposal are presented below:

**Table 18 Expected benefits of the proposal**

| Identified challenges | Proposal structure | Expected benefit |
|---|---|---|
| The definition of a pilot during development projects is not clear | Pilot type descriptions | • Project team is more knowledgeable when selecting the pilot types for the project as well as informed of the generic targets for each pilot<br>• To improve the preparation stage of the pilot project |
| Inappropriate pilot location selection | Pilot location feasibility checklist | • The project team (and FL) would perform fact-based decisions on where to pilot<br>• A more mature roll-out package for the deployment team, when all necessary business models are piloted |
| Pilot objectives and success criteria are not clearly defined or measured during the project | Piloting checklist template | • To support the project team in executing the some of the necessary prerequisites<br>• To ensure that critical aspects relating to a new digital solution pilot are considered to be a part of the pilot<br>• A more holistic view for piloting new digital solutions during development projects |
| Piloting focuses too much on technical solution validation | | |
| Communication is not effective enough between all stakeholders involved in the project | | |

The table shows the challenge identified in the CSA in relation to the proposal item and the expected benefit. All challenges are partially addressed in each part of the proposal, meaning that not one output is exclusively addressing only those challenges assigned to it in table 17.

The next chapter explains the process for building the final proposal as well as the adjustments made based on feedback. The final proposal is a slightly enhanced version of the initial proposal which was presented in this chapter.

# 6 Validation of the Proposal

In this chapter the proposal presented in chapter 5 is validated, thus the outcome of this chapter is the final proposal. Foremost, the overview of the process steps in chapter 6 is presented. Then the feedback is described and built upon the preliminary proposal. The final proposal in its entity can be seen in appendix.

## 6.1 Overview of Proposal Validation

During the validation stage the initial proposal including all of its components was presented to the company representative. An assessment of the proposal was done to ensure that all of the proposal contents are accurate and support the objective of this study. As a result of the assessment session, feedback for enhancing the proposal presented in chapter 5 was documented to make the adjustments to create the final proposal. The figure below gives an overview of the process steps.


**Figure 18 Overview of the proposal validation stage**

As shown in Figure 18 proposal validation was executed in four steps. First the (1) pilot type descriptions document, (2) pilot location feasibility checklist and (3) Pilot prerequisites checklist were presented to the company representative the Head of Ecosystem Business who has also personally been involved in multiple digital solution pilot projects. A more detailed description of this session is presented in table 18.

**Table 19 Third data round for proposal validation**

| | Participant / Role | Data Type | Topic, Description | Date, Length | Documented as |
|---|---|---|---|---|---|
| | Data 3, For Proposal Validation | | | | |
| **15** | Head of Ecosystem Business | MS Teams | Validation of final proposal | 29.4.2020, 60 minutes | Field notes |

During this session feedback was gathered and documented. The adjustments made to the initial proposal are presented in this chapter. The final proposal is in appendix.

## 6.2 Key Findings of Validation

Firstly during the validation session (seen in table 18) all of the proposal items were reviewed. Based on this some additional actions were requested to be taken in order to enhance the proposal. These actions primarily focused on the (1) pilot type descriptions document and (3) The pilot prerequisites checklist.

There was no adjustment suggestions for the (2) Pilot location feasibility checklist, thus it remains identical to the checklist presented in chapter 5.3. Based on the feedback from the company representative this item of the proposal was seen to be a valuable tool for supporting the pilot location selection process in future projects.

A few minor wording changes were requested to be made for the (3) The pilot prerequisites checklist and for the (1) pilot type descriptions document. A couple of additions were inserted in the (1) pilot type descriptions document in the customer co-creation pilot row. Here a mentioning that the *”development project team can also support in delivering any needed materials/components for early co-creation pilots”* was added.

In addition to these minor changes made to the existing proposal items, an additional sheet was requested to be added to the entire document which would describe shortly the description of each of the documents/templates, the target group that the documents are intended for and some short instruction for using the templates.

All of the suggested actions were taken after the validation session thus achieving the final version of the piloting framework. The final version of the proposal can be seen in appendix. The next chapter is presents the summary and conclusions of this thesis.

# 7 Summary and Conclusions

This chapter contains the summary of this study, next step suggestions for the case company in terms of the proposal and an evaluation of the outcome against the study objectives and company challenges.

## 7.1 Executive Summary

Global companies take on big challenges when developing and deploying new digital solutions globally. Piloting can be a less risky way for testing that the solution meets the requirements and delivers value to the organization and customers across locations. And as the solution is yet to be released the development team also gets the chance to gather valuable feedback from pilot customers regarding adjustments to the solution functionality.

However, in addition to piloting allowing a “Lean Startup” type of methods for developing solutions, it also provides the advantage of testing the operational readiness for adopting the new solution across the desired country units. This type of process piloting allows the company to optimize its processes and IT tools to ensure that the full-chain processes support the successful delivery and operation of the digital solution up until its decommissioning from customer premises.

The study was carried out for a global elevator and escalator manufacturing company which also provides services to add value to the life cycle of buildings’ and to enhance the user experience inside buildings. The objective of this thesis was to propose a piloting framework which would support the piloting phase of digital solution development projects. The outcome of this thesis consisted of three parts: (1) pilot type descriptions, (2) a pilot location feasibility checklist, (3) a pilot prerequisites checklist. All of these are intended to be used by the development project team prior to the pilot, during the pilot and after the pilot.

This study was carried out in seven stages. The first activities of the project was to investigate holistically the business challenge of piloting new digital solution globally as

well as to define the objective of this study. In addition to this the thesis scope was agreed on.

Next the research methods for this study were defined to obtain the current state of the company and to support the proposal building. These can be seen in chapter 2. Based on first data collection round and internal materials analyzed in this study the current state analysis was obtained. The main outcome was a weakness & effect matrix (chapter 3 table 6)

Next the theory topics were defined based on the findings in the CSA. The theory topics were carefully chosen to support in building the proposal. The correlation of the two can be seen in the summary of chapter 3 (table 8) and the theory in chapter 4.

The second data collection round was carried out which consisted of two workshops and five additional interviews. The main purpose for the second round of data gathering was to define the proposal structure and to gather additional content to the proposal items. The outcome of these discussions is presented in chapter 5.

Finally the initial proposal was validated in the third data collection round. Based on the feedback adjustments were made which are described in chapter 6. The final proposal can be seen in appendix. It consists of three parts all in an excel format. In addition to this there is a document description sheet which describes the purpose of each of the three document items, their target audience and some instructions for usage.

As a result of the study outcome it is expected that the entire proposal would be used by the development project team to support in piloting new digital solutions. The findings and outcome of this study is expected to benefit the case company and other manufacturing service companies alike which operate globally. The proposal of this study provides guidelines for executing tasks which can affect the success of the development project prior to solution release and overall deployment efficiency. Such tasks include the selection of pilot locations and determination of a pilot type, pilot requirements and success criteria – which based on the study findings are critical for pilot success.

The main benefits expected from the study outcome are that key activities during a pilot in a development project would be more efficiently executed. In addition the expected benefit is that the overall pilot phase would deliver more valuable outcomes both in terms of the development project and the deployment project.

## 7.2 Next Steps

During this study tools/templates were created as part of the piloting framework. However the framework itself could have had more theoretical contents to it based on the findings from the interviews.

Hence, as next steps, it would be suggested that the company would build the framework by utilizing the findings form this thesis and by taking advantage of other project learnings. Thus creating more theoretical guidelines on digital solution piloting do's and don'ts.

Furthermore, I believe that the company could benefit from developing a more holistic framework/model which would clearly define what is the role of a pilot during a development project, when should a pilot be executed, and what type of a pilot should it be. Also what is the stage that the solution should be at before it is acceptable to start executing different pilot types.

The following questions surfaced during the thesis interviews and could be utilized during further development of the piloting framework: At what stage is the solution ready to be adopted by the real environment and at what scope? Do we want to develop all solution functionality early and as quickly as possible before full-chain process pilots? Or do we want to create and MVP and start piloting with the most critical functionality first?

Second, as mentioned in chapter 3 feedback gathering during a pilot has been poor and unsystematic. When piloting digital solutions, gathering constant feedback is crucial for identifying further improvement needs for the solution and its supporting processes while the solution is in operation. Thus as a more specific next step development proposal, is to define a standard ways for gathering feedback and tools to support the processes.

As a final note, it is suggested that the piloting framework would be located in a place which is accessible by the relevant company stakeholders and that it would be further developed.

## 7.3 Evaluation

The objective of this thesis was to propose a piloting framework which would support the project team in the piloting phase of digital solution development projects. The contents of the final proposal were primarily extracted from the interviews with company specialist, who have been involved either directly or indirectly in digital solution piloting projects.

The rest of the contents were extracted from internal materials which were shared during the project and from literature relating to the study topics. In conclusion the final proposal has many fact-based learnings from experienced individuals in the field, thus making the proposal reliable.

However, as the scope of the project was quite large, simplifying the framework to have the most relevant and critical contents that could be applied to any digital solution development project was found to be difficult. Thus the proposal itself should not be perceived as having all of the checkpoints needed to guarantee successful pilot projects, but more of a set of guidelines which definitely should be considered during different piloting activities to ensure that the digital solution and its supporting processes and tools are developed in a manner which ultimately affect the success of solution development, implementation and operation.

In addition for achieving a more reliable outcome for the case company more individuals could have been involved in the proposal building workshops and the validation of the proposal. This would have ensured that more perspectives would’ve been considered.

Overall, the feedback from the case company was positive. The findings from this study will hopefully be of great use for future company projects. Hopefully similarly the contents of the piloting framework will continue to evolve with future usage so that a standardized way for piloting could be achieved to maximize the advantage that it can provide.

## 7.4 Final Word

The entire process of conducting this study has given me multiple learnings and insight into the ways multinational companies develop and introduce new digital solutions to the market. I am grateful for the opportunity to have worked on my thesis in a global environment with wonderful knowledgeable people from different areas. This has been a big learning experience and I am certain that these new skills and knowledge will be of great use in my future career. Special thank you' s to everyone who participated with their time and effort.

## References

Ashford Global (2020) Understanding the Four Ps of ITIL® Service Management, [Online] Available at: https://www.ashfordglobalit.com/training-blog/itil-tips-and-training/understanding-the-four-ps-of-itil-service-management.html (Accessed: 9th of March 2020)

Axelos Limited (2019) ITIL foundation : ITIL 4 edition, [E-book] Available at: https://metropolia.finna.fi (Accessed: 15th of April 2020)

Basford & Schaninger (2016) McKinsey: The four building blocks of change, [Online] Available at: https://www.mckinsey.com/business-functions/organization/our-insights/the-four-building-blocks--of-change (Accessed 14th of April 2020)

Bmc.com (2016) What is service transition? [Online] ( Available at : https://www.bmc.com/blogs/itil-service-transition/) Accessed 10th of April 2020

Buchel & Davidson, 2019, The Art of Piloting Initiatives, Kindle Edition version, [E-book], (Accessed 2nd of February 2020) Amazon.com

Bytestart.co.uk (2017) The Power of the 'Pilot' – 3 Reasons Why You Should Test Your New Business Before Launch, [Online] Available at: https://www.bytestart.co.uk/pilot-test-new-business.html) (Accessed 13th of Apr. 2020)

Crazy Egg (2017) What is a Vanity Metric?, [Online] Available at: https://www.crazyegg.com/blog/glossary/what-is-a-vanity-metric/ (Accessed: 15th of April 2020)

HCI-ITIL.com, (2010) Service Design Technology-Related Activities, [Online] Available at: https://www.hci-itil.com/ITIL_v3/books/2_service_design/service_design_ch5.html (Accessed 2nd of April 2020)

Huovinen (2017). IT Standard for Business. [Online] Available at: https://www.itforbusiness.org/ (Accessed 23rd of April 2020)

ITSMproceses.com, (2020) Roles of IT Service Management, [Online] Available at: https://www.itsmprocesses.com/Wiki/Englisch/ITIL%20Roles.htm#Test_Manager (Accessed 13th of February 2020)

Jones et al, (2004) 10 principles of change management, [Online] Available at: https://www.strategy-business.com/article/rr00006?gko=dab72 (Accessed 3rd of April 2020)

McKinsey & Company (2018) Unlocking success in digital transformations, [Online] Available at: https://www.mckinsey.com/business-functions/organization/our-insights/unlocking-success-in-digital-transformations (Accessed: 3rd of March 2020)

Pink Elephant (2018) Service Management Concepts Made Easy Part 1: Utility vs. Warranty [Online] Available at: https://www3.pinkelephant.com/ressource/PinkLink/na/issue87/May%202008%20-%20ITIL%20V3%20Concepts%20Made%20Easy%20Part%201.pdf (Accessed 2nd of April 2020)

Prosci.com (2017) What is Change Management? [Online] Available at : https://www.prosci.com/resources/articles/what-is-change-management (Accessed: 4th of March 2020)

Stickdorn (et al) 2018, This is service design doing : applying service design thinking in the real world : a practitioner's handbook [E-book] Available at: https://ebookcentral.proquest.com/lib/metropolia-ebooks/reader.action?docID=5219777 (Accessed 2nd of April 2020)

# Appendix 1: Pilot Type Descriptions

| Pilot type | What, why & when | Prerequisites | Typical goals and completion criteria |
|---|---|---|---|
| Customer co-creation pilot | Customer co-creation pilots refer to a case where a solution is installed into customer's use before the design is frozen.<br><br>**Testing that the solution is fitting for customer's use and the company operations.**<br><br>Occurs early during a development project.<br><br>A customer co-creation pilot is similar to a PoC. There is no standard company documentation or tooling in place. The main objective is to test whether the solution brings value to the customer's business, thus allowing to make changes and adjustments to the solution.<br><br>Requirement level for customer co-creation pilots must be defined in order to evaluate whether solution pilot fulfils the requirement. | 1. Frontline and customer must be aware that the solution is not final and the quality might not be as high as in the final product/service.<br><br>2. Use of solution does not compromise users or company field personnel safety. Mandatory safety certificates must be in place and risk analysis must be performed.<br><br>3. Supply line or development project has resources to support manual process in case needed.<br><br>4. Solution project has funding for material and possible later retro-fits.<br><br>5. Solution project has resources to support installation, maintenance and trouble shooting.<br><br>6. Customer is engaged and open to give feedback. | 1. Customer perceives value from the solution.<br><br>2. Validated learning. The result is learning that is evidence-based and actionable, leading to genuine product improvements before the solution is released to production. |
| Technical pilot | **Technical pilot refers to a case where a new component / subsystem / module is installed in an existing assembly in customer's premises replacing the existing one.** Technical pilots are used to validate the reliability of the component as a part of an entire equipment in real operating environment after the solution design is frozen. Full-chain process validation is out of scope.<br><br>Especially when the solution volume is expected to ramp up quickly and depends on building interface and installation. | 1. Customer and frontline agree.<br><br>2. Available sites where the new component/sub-system/part can replace an existing component/sub-system/part -interface compatibility ensured.<br><br>3. Solution project has funding for material and possible later retro-fits.<br><br>4. Solution project has resources to support installation, maintenance and trouble shooting. | 1. Component/sub-system/module operates in the real-operating environment as expected and meets the requirements.<br><br>2. Component is operating reliably as part of the entire equipment. |

| | | | |
|---|---|---|---|
| Software pilot | Validating that a new software release meets expectations. The target is to identify potential issues in meeting customer expectations in a real operating environment. If issues are detected they can be acted before volume deliveries start. | 1. Frontline agrees.<br><br>2. Verification done, i.e. release testing has passed the acceptance criteria. | 1. Software meets the requirements and operates in the real environment as expected. |
| In-house pilot or full-chain process pilot in company premises | Validating the functioning of a solution in company premises – can be partial or full-chain process pilot (order, delivery, installation, onboarding, maintenance) based on agreed targets.<br><br>Benefit: Company is in control of the schedule. | 1. Frontline agrees.<br><br>2. Processes have been developed and verified (including feedback processes).<br><br>3. Frontline is aware that the project is in piloting phase and is aware of the commitment needed from their side.<br><br>3. Frontline and customer are aware of the project targets. | 1. Validated learning. The result is learning that is evidence-based and actionable, **leading to genuine process improvements and small product adjustments in continual improvement activities.**<br><br>2. Learnings can be applied and used for improving deployment efficiency. |
| Full-chain process pilot in customer premises<br><br>*(Also known as; E2E process pilot or process pilot)* | Piloting in customer premises is the classic way of piloting. The target is to validate full-chain process of a solution delivery, and operation in final use, from ordering to engineering, manufacturing, transportation, storage, installation and maintenance.<br><br>Validate full-chain process of a solution delivery and operation from ordering to engineering, manufacturing, transportation, storage, installation to final use.<br><br>Scope: Full chain process validation – from order to commissioning.<br><br>Note that the project team is not in control of the installation schedule. This prevents the reliability of feedback regarding the solutions' feasibility prior to the solutions' release to production. | 1. Frontline and customer agree.<br><br>2. Frontline and customer are aware that the project is in piloting phase.<br><br>3. Frontline and customer are aware of the project targets.<br><br>4. Processes have been developed and verified (including feedback processes). | 1. Validated learning. The result is learning that is evidence-based and actionable, **leading to genuine process improvements and small product adjustments in continual improvement activities.**<br><br>2. Learnings can be applied and used for improving deployment efficiency.<br><br>3. Solution is monitored and operates against the set targets. Fit for use and fit for purpose. |

## Appendix 2: Pilot Location Feasibility Checklist

| Item | **Question audience** (The team for which the question is intended) | **Operational/ Customer related** | **Question** | **Answer** (Yes, No, Not known yet) *Insert FL/customer* |
|---|---|---|---|---|
| **1** | Global, FL | Operational | **Does the FL management team strongly support this pilot?** *(Will it stress the importance of the pilot to the local organization, will it actively push to make the pilot successful?)* | |
| **2** | Global, Area, FL | Operational | **Is the FL practicing the company's methodologies?** | |
| **3** | Global, Area, FL | Operational | **Does the FL have the critical key roles in place needed for pilot success?** (FL PM, etc..) | |
| **4** | Global, FL | Operational | **Does the FL understand the pilot objectives?** *(Why we are piloting, what are we piloting, what is the readiness of the solution, what is the project schedule, what is the scope of the pilot, what is the level of investment and commitment needed from FL side?)* | |
| **5** | Global, Area | Operational | **Does the area team have the capacity to support the pilot implementation?** | |
| **6** | Global, Area, FL | Operational | **Does the FL have necessary prerequisite company tools and processes to make this pilot a success?** (CRM, KTOC etc.) | |
| **7** | Global team, Area team and FL | Operational | **Does the FL have the resources available to implement the pilot?** *(Right people, funding, time, competencies)* | |
| **8** | Global team, Area team and FL | Operational | **Does the FL have any must do's which need to be taken into account in the pilot?** *(Country legislation regarding e.g. certifications, regulatory compliance requirements, data security and collection regulations or time difference between global and FL)* | |
| **9** | Global, Area, FL | Operational | **Do the FL environment support the pilot objectives?** *(FL size, structure, local market conditions etc.)* | |

| | | | | |
|---|---|---|---|---|
| **10** | Global, FL | Operational | **Is the FL not too similar to other FL's which have been chosen or are under consideration?** *(Will this FL have a different business model from the other FL's chosen/under consideration, but not too different to compromise pilot success? Things to consider, FL structure, resources, processes, local market conditions)* | |
| **11** | Global, Area, FL | Operational | **Is the business model concept for the new solution applicable to the FL and country?** | |
| **12** | Global | Operational | **Is the FL experienced in piloting global solutions?** | |
| **13** | FL | Customer | **Does the customer have an optimal level of status on a local/global level?** *(Influence level, level of risk if the pilot fails?)* | |
| **14** | FL | Customer | **Is there an innovative lead customer willing to test the first product or solution?** *(Early sign-off of customer willing to work with the team, customer is a proven innovator/early adopter?)* | |
| **15** | FL | Customer | **Is this global customer willing to provide on-going feedback?** *(Customer can make the time needed to provide feedback?)* | |
| **16** | FL | Customer | **Does the customer understand the solution readiness?** | |
| **17** | FL | Customer | **Does the customer and end-users have the skills and knowledge to use the solution?** *(Other digital solution implementation background?)* | |
| **18** | FL | Customer | **Does the pilot site represent the real-life operating environment where the solution will be ultimately used?** (In terms of end-user amount, monitoring capacity needs, building traffic etc. ) | |

## Appendix 3: Pilot Prerequisites Checklist

| Item | Pilot phase | Question | Example activities | Answer (Yes, no, not known yet) |
|---|---|---|---|---|
| **1** | Pilot preparation | **Have we decided the pilot FL's based on specific criteria?** (The aim should be that most business models would be piloted during a development project to create an feasible roll-out template) | 1.Utilize the pilot location feasibility checklist (See sheet 3) | |
| **2** | Pilot preparation | **Have we defined the prerequisites around connectivity for each location where the digital solution will be installed?** *(Connectivity needed in building/shaft?)* | 1. Having detailed connectivity requirements (specific enough to enable fast judgement on whether the pilot environment enables reliable operation of the solution)<br><br>2. Having a detailed connectivity requirement architecture | |
| **3** | Pilot preparation | **Have we ensured that the pilot locations represent the real-life operating environment where the solution will be ultimately used so that we can truly validate that the solution meets the needs of the users?** *(Represent the real-life operating environment in terms of the amount of end-users, monitoring capacity needs, building traffic, connectivity etc.)* | 1. Scenario Analysis<br><br>2. Creating detailed use cases | |
| **4** | Pilot preparation | **Are we investigating that the pilot locations' environment meets the required connectivity prerequisites?** *(These vary based on building type, shaft build, geographical location)* | 1. Establishing a site-survey document and process | |
| **5** | Pilot preparation | **Have we defined what data is needed to assess service quality? Has the remote monitoring capabilities been validated to provide this data reliably?** | 1. Nominating a Service Manager<br><br>2. Creating a service support model | |

| | | | | |
|---|---|---|---|---|
| | | *(This is necessary for service managers to understand how the service is operating and to identify problems)* | 3. Identifying service level requirements | |
| **6** | Pilot preparation | **Have we truly planned what needs to be validated during piloting in order to deliver value to our customers?** *(Considering what is the customer buying and what is the value that the customer is buying with our solution)* | 1. Specifying the pilot targets and completion criteria<br><br>2. Identifying stakeholders and their expectations (Stakeholder Analysis) | |
| **7** | Pilot preparation | **Have we ensured that we have set-up proper feedback gathering processes in place to maximize pilot learnings and to support deployment team with solution roll-out?** | 1. Identifying feedback loops for customers, end-users and other stakeholders<br><br>2. Having a detailed PSR (Pilot Site Review) template and process | |
| **8** | Pilot preparation | **Have we defined standard communication practices to ensure regular and transparent communication between all stakeholders involved during the pilot?** | 1. Creating an email address for the piloted solution (to have a single point of contact to provide support for partners, customers and frontlines)<br><br>2. Establishing MS Teams sites for all stakeholders or specific groups<br><br>3. Having a master list for providing e.g. customer and frontline contact information *(See sheet "pilot case list template")* | |
| **9** | Pilot preparation | **Do we have the key roles and competencies in place to ensure pilot success?** *(e.g. Service Manager, Test Manager, having clearly defined roles and responsibilities)* | 1. Nominating key roles in the project team (e.g. Service Manager, Test Manager)<br><br>2. Having the key roles in frontline<br><br>3. Executing a stakeholder analysis | |
| **10** | Pilot preparation | **Have we set up pilot success criteria and KPI's which are actionable?** | 1. Setting detailed targets to determine the success of the pilot (functional, non-functional and operational targets) | |

| | | | | |
|---|---|---|---|---|
| **11** | Pilot preparation | **Have we defined the necessary activities to onboard end-users, customers and other stakeholders?** | 1. Identifying stakeholder groups<br><br>2. Identifying onboarding effort<br><br>3. Developed onboarding processes | |
| **12** | Pilot preparation | **Have we defined detailed use cases?**<br>(These should be documented somewhere which is accessible later on to the project team) | 1. Identifying customer needs<br><br>2. Customer co-creation efforts | |
| **13** | Pilot execution | **Are consistently reviewing and the documenting the pilot learnings?**<br>*(What are the things which the deployment team should take into account when deploying the solution further?)* | 1. Establishing standard and systematic documentation and communication practices | |
| **14** | Pilot execution | **Have we as the project team established standard documentation and communication practices?** | 1. Project team SharePoint<br><br>2. Project team MS teams site<br><br>3. Backlog for activities | |
| **15** | Pilot execution | **Are we monitoring and managing quality KPIs, risks and opportunities and push for continuous improvement?** | 1. Developing and managing dashboards and report tools<br><br>2. Identifying monitoring needs and efforts<br><br>3. Onboarding monitoring teams (e.g. KITOC, DMS) | |
| **16** | Pilot execution | **Have we ensured collective learning and knowledge accumulation?** | 1. Identify needs for new knowledge | |
| **17** | Pilot execution | **Have we validated that the customer perceives value from the solution in the same way we expected?**<br>(Customers sees the benefit of our solution over the competitors' ?) | 1. Post installation interview<br><br>2. Online survey | |

## Appendix 4: Challenge Distribution per Interviewee

| Interviewees / Key Challenges Found During the Study (Amount of Mentioning's Per Challenge) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | The definition of a pilot during development projects is not clear | Pilot objectives and success criteria are not clearly defined or measured during the project | Inappropriate pilot location selection | Piloting focuses too much on technical solution validation | Communication is not effective enough between all stakeholders involved in the project | Feedback gathering is not systematic | Resource allocation |
| Individual A | x | x | x | x | x | x | |
| Individual B | | | x | x | x | | x |
| Individual C | x | x | x | | x | x | |
| Individual D | x | x | x | x | x | x | |
| Individual E | x | x | x | x | | x | x |
| Individual F | x | x | x | x | x | | x |
| Individual G | x | x | x | x | | x | x |
| Individual H | x | x | | x | x | | |
| Individual I | x | x | x | x | | | x |
| **Total** | **8/9** | **8/9** | **8/9** | **8/9** | **7/9** | **5/9** | **5/9** |